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T R E A T I S E
 ON THE
 HISTORY, NATURE, AND TREATMENT
 OF
CHINCOUGH:
 INCLUDING
 A VARIETY OF CASES AND DISSECTIONS.
 TO WHICH IS SUBJOINED,
AN INQUIRY
 INTO THE RELATIVE MORTALITY OF THE PRINCIPAL
DISEASES OF CHILDREN,
 AND THE
 NUMBERS WHO HAVE DIED UNDER TEN YEARS OF AGE, IN
 GLASGOW, DURING THE LAST THIRTY YEARS.

BY ROBERT WATT, M.D.

MEMBER OF THE FACULTY OF PHYSICIANS AND SURGEONS OF
 GLASGOW, MEMBER OF THE LONDON MEDICAL AND CHIRURGICAL
 SOCIETY, &c. AND LECTURER ON THE THEORY AND ON
 THE PRACTICE OF MEDICINE IN GLASGOW.

————— *quæque ipse miserrima vidi,*
Et quorum pars magna fui. VIRG.

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 1813.

CHINCOUGH.

A VARIETY OF CASES AND DISCUSSIONS.

By Wm. Farrington.

AN INQUIRY
INTO THE RELATIVE MORBIDITY OF THE CHINCOUGH
STRONGER IN ORDINARY TO THE BRONCHITIS.

THIS WORK

AS A REVIEW OF THE
THEORY AND PRACTICE OF THE
CHINCOUGH CHRONICALLY BEING SO LONG, AND
THEORY AND PRACTICE OF THE

BY ROBERT GALT, M.D.

OF THE FACULTY OF MEDICINE AND SURGERY
GLASGOW, MEMBER OF THE SOCIETY OF MEDICAL AND CHIRURGICAL
DOCTORS, AND LECTURER ON THE THEORY AND
PRACTICE OF THE CHINCOUGH.

THE AUTHOR

GLASGOW:

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TO

SIR GILBERT BLANE, BART.

M. D. F. R. S. &c.

PHYSICIAN IN ORDINARY TO THE PRINCE REGENT,

THIS WORK,

AS A TRIBUTE OF RESPECT

TO THE HIGH CHARACTER HE HAS SO LONG, AND

SO DESERVEDLY HELD IN THE

PROFESSION,

IS RESPECTFULLY INSCRIBED,

BY

THE AUTHOR.

CHAPTER

SIR GILBERT BLANE, BART.

AT an early period of the Author's practice, his attention was particularly drawn to this cough, by the occurrence of several very serious cases, some of which proved fatal. At this time he was struck with the very scanty knowledge we possessed of the nature of the disease, and still more with the uncertainty which existed respecting the practice. Every author seemed to have his own hypothesis, ready to which he clung, without knowing why it was prescribed, or how it operated.

He found that Clinico, though a very respectable, and a very fatal disease, had engaged but a small share of medical attention. It had been noticed, indeed, by some of our best practical writers; but still it had by no means been investigated with that care and attention which its frequency and fatality deserved. The great cause of this obscurity proceeded from the re-

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He found that Chincough, though a very general, and a very fatal disease, had engrossed but a small share of medical attention. It had been noticed, indeed, by some of our best practical writers; but still it had by no means been investigated with that care and attention which its frequency and fatality deserved. One great cause of this obscurity proceeded from the ge-

neral belief, that it was entirely nervous or spasmodic, and that consequently no traces were to be discovered after death, by which we might form even a conjecture regarding its seat or its nature.

In the English language he hardly found a separate work on the subject, nor were the productions of other countries more numerous or respectable than our own. The disease, in fact, had been very generally abandoned by the profession, and left, as Willis observes, to the management of old women and quacks.

About eight years ago, the Author's attention was again directed to the subject, by the occurrence of the disease in his own family. At this time he had three children affected with Chin-cough, all of whom were treated in a particular manner*, and with so much apparent success, that he flattered himself the remedy he had employed would prove generally successful. By further trials, however, his hopes were so much disappointed, that for several years the practice was

* See the account given of the vapours of Tar, in a subsequent part of this Work.

entirely laid aside. At this time, the plan of an Essay on Chincough was sketched, and some part of it executed, but the main object having failed, the whole was abandoned.

His having again resumed the subject, was occasioned by another visit of the same disease, in the months of December and January last. At this time he had four children affected with Chincough, the two eldest of whom died. The anxiety occasioned by this severe and unexpected event, led to fresh investigations; but the more he read and studied, the more he found himself bewildered and perplexed. With regard to the nature of the disease, he found nothing but conjecture; some supposing it to be one thing, some another, according as their different theories led them to believe.

This state of uncertainty, and the hope of doing good to those who still survived, led him to cause the body of his son to be inspected, and afterwards that of his daughter. From these dissections he derived the most solid satisfaction. They pointed out the nature of the disease at once, and settled every doubt in his mind, re-

specting the mode of treatment which ought to be pursued. The death of some other patients, and the opportunity afforded of inspecting their bodies after death, threw still further light on the nature and progress of the disease, and determined the Author to lay the result of his investigations before the public. His first intention was to have done this through the medium of some of the periodical publications; but the facts and observations soon becoming too numerous for an essay of that kind, he thought it a more probable way of calling forth investigation, to send them into the world as a separate work.

He was farther induced to adopt this method as he knew of no practical treatise on the subject. Many facts have been recorded, and many observations have been made, but these are scattered through such a variety of publications, as hardly to be accessible to any one individual. It has, therefore, been his aim, to give a general view of the subject, not merely as it occurred to his own observation and experience; but also as it was to be found in our best medical writers. The practitioner by thus seeing all that is known, is

enabled to form an estimate of what is still wanting, and may at last arrive at more rational and just conclusions, respecting this hitherto obscure and intractable disease.

The reader is presented with a fair statement of facts, and may reason for himself, unbiassed by any conjectures or reflections the Author may have thought proper to make. The views he has taken of the subject, may not be such as will occur to others; but they may suggest conclusions, or enable readers to contrast or compare their own opinions with his, and thus contribute to the confirmation of truth, or the refutation of error. He is much less solicitous about the fate of his theoretical speculations, than about the facts he has ascertained, and the practical deductions he has made.

The connection, or points of similarity between Chincough and other diseases, has engrossed much of his attention. He considers the hints and observations on this head, as peculiarly deserving of investigation, and leading to views of the animal economy, in health and in disease, which may prove not only interesting, but useful.

There is probably a more intimate connection between many diseases, than is usually suspected, and it is only as we come to trace their resemblances, and ascertain their affinities, that we obtain more distinct and enlarged notions, respecting their nature and cure. By entering into some of these details, the work has been considerably extended beyond the Author's original intention; but it is hoped the importance of the object, will recommend these attempts to indulgence if not to favour.

The Author had some expectations of being able to present the public with a greater number of dissections, but in this respect he has been less successful than he could have wished. The reluctance of relatives to allow examination after death, and the indifference of practitioners, when they have no immediate or urgent object in view, unhappily prevent the discovery of much useful information respecting diseases.

The importance of a very general and minute dissection is well illustrated in the first case; for had it not been for the second examination, some valuable facts would have been lost. In

such investigations we ought not to be guided by the more striking symptoms alone, or by mere nosological distinctions. The Author has endeavoured, and he hopes not unsuccessfully, to direct attention to the more remote and obscure, as well as the more immediate and apparent effects of disease. Some good may result from this publication if it shall stimulate to similar investigations, and bring forward a greater body of evidence on the subject. Should this be the case, the Author will have the consolation of thinking, that though his domestic losses have been severe, they have in some measure contributed to the public good.

But these are not the only advantages the work derives from the occurrence of the disease in the Author's own family. It afforded him an opportunity of witnessing its progress from first to last; of studying its various shades and gradations, and of marking the effects of the different remedies employed. He is, therefore, encouraged to hope, that from these, and other sources of information, the treatise now presented to the public will make some addition to our stock of medical knowledge.

The excuses for publication are many; but the want of success in practice is seldom among the number. We are more ready to record our good, than proclaim our bad fortune. Indeed from the natural uncertainty of the art, we never can fail in practice, without having some doubts, whether if we had acted otherwise, we might not have been more successful. In this state of hesitation, we dread that blame, from which even our most successful endeavours are not always exempt. When a man fails, it is easy for the censorious to say, "nothing else was to be expected."

The most unfortunate circumstance attending Chincough, is the progress of the complaint previous to application for medical assistance. The first slight, though often fatal symptoms, escape notice; and too much confidence is generally placed in the power of specific medicines; or in the efforts of nature. It is chiefly the more intractable cases, or those where the disease has arrived at an incurable stage, that come under the notice of the practitioner. Here, he can only witness its resistless progress, and lament the limited power of his art.

The Appendix may probably attract some attention as it presents statements and results, which could not previously have been expected. The hopes of so greatly diminishing mortality among children by the introduction of Cow Pox, so fondly entertained by every friend of humanity, appears, in so far as regards the city of Glasgow, to be fallacious.

The Author has been told that the statements he has made are likely to produce injurious effects, in strengthening the prejudice of the vulgar. To this he would reply, that if prejudice is only to be suppressed, by concealing the most important facts, he has no idea of purchasing its suppression at so high a price. If it appears from the Registers of Deaths, that Measles have become ten times more fatal within these few years, whatever may have been the cause, it is time the Profession at least, should be informed of the fact.

The most sanguine Vaccinists never contended for more than that Cow Pox was an antidote to the Small Pox, and of this the Tables afford the most ample proof in the reduction of deaths by the

latter disease, from nearly twenty per cent. to less than four. We may deplore that the deaths on the whole have not been much diminished; but no blame can be attached to vaccination; our ideas of its utility may be somewhat lessened; but still it deserves our gratitude. If it has not saved so many lives as was expected, it has at least preserved the beauty of the human form, and saved mankind from much affliction and suffering.

GLASGOW,
10th September, 1813.

THE HISTORY

OF

CHINCOUGH.

THE NAME.

THIS disease has been known by a great variety of names. In Britain it has been promiscuously denominated the Hooping cough, the Kink-cough, and the Chincough. The first of these terms, I believe, is the one most generally employed, though perhaps, the most exceptionable of the three.

It has been termed Hooping cough, because the patient, during the fit of coughing, produces a peculiar sound, or what has been denominated a *hoop*, in drawing in his breath. But this sound, though remarkable enough in some cases, is totally wanting in others; and therefore, a name

derived from a circumstance, which is not to be met with in a great proportion of cases, cannot with propriety be employed to express the whole genus.

The term Kink-cough is mostly confined to Scotland. It is derived from the circumstance, that the cough returns in paroxysms. The first part of the term is a Scotch word, synonymous with fit or paroxysm, and is not applied to coughing alone; but to some other involuntary or convulsive motions, and particularly such as produce noise. Thus we speak of a kink of laughing, a kink of crying, &c. almost as readily as a kink of coughing. My objections to this term are, that it is provincial, difficult to be pronounced, and not sufficiently precise in its application.

The word Chincough is the ancient English expression for the disease, though its origin seems to be much more obscure than that of the other two. Dr. Johnson thinks, that the first part of the term may probably come from the Dutch word *kinckin*, which signifies to pant. We shall find afterwards, that panting and breathlessness are very frequently symptoms of the disease, but still I cannot help thinking the derivation fanciful, if not improbable.

Another derivation is given, which appears to be still more ridiculous, and which I would hardly have noticed, had it not been considered as explanatory of the nature of the disease, and given birth to a particular practice on which much stress has been laid, at least by the vulgar. The disease is supposed to consist chiefly in an affection of the spine. The spine consisting of several parts joined to one another, like so many links, has been supposed to resemble a chain. Hence we are told, that the disease ought to be, and was originally termed *Chain-cough*; but by a corruption of language, it has come to be spelled and pronounced *Chincough*. There is some ingenuity in all this, but I suspect very little truth. The practice founded upon it is rubbing the back with strong liniments.

I have adopted the term *Chincough* in preference to the other two, for various reasons. *Hooping cough*, besides being a longer and a more compounded word, conveys an erroneous notion of the disease. *Kink-cough*, as I have already observed, is a provincial term, is harsh and difficult to be pronounced, and besides it does not convey with sufficient precision the idea intended. Every kind of cough returns more or

less in fits or paroxysms, hence the word, in its more general sense, might be applied to all of them with nearly equal propriety.

I use the word Chincough as a mere arbitrary term, chosen to express a particular disease. The last part of it, no doubt, shews that the disease belongs to a particular order; the first part of it has no signification, except what may be assigned to it by definition. Terms of this kind are the best adapted to science. They convey no erroneous ideas, and are easily adapted to progressive improvements. Nothing is more disgusting to a mind in quest of real knowledge than a perpetual change of terms; changes often resting on the most frivolous conceits, and unfounded conjectures.

The Latin terms for Chincough are still more numerous than the English. From the celebrated Sydenham we have *Pertussis*, which has been retained by Huxham, and also by Cullen. From the illustrious Willis we have *Tussis Convulsiva*; from Hoffman *Tussis Convulsiva sive Ferina*. From others we have *Tussis Clangosa*, *Tussis Perennis*, *Tussis Amphimerina*, *Tussis Suffocativa*, *Tussis Puerilis*, *Tussiculosa*, &c. all of them derived from some circumstance supposed to be

peculiar to the disease, or in some way expressive of its nature. In France it has been termed *Tussis Quinta*, or *Quintana*; *La Coqueluche*, and *Paroxysmes Quintes*.

THE ANTIQUITY OF THE DISEASE.

It appears pretty certain that this disease was wholly unknown to the Greeks. A variety of terms from that language have indeed been quoted; but when we come to examine the diseases to which they were applied, they seem to have no sort of resemblance to the Chincough of modern times. The Greek terms were translated by the ancient Romans; but it does not appear that they were applied to any thing, except common coughs in different degrees of severity. On the whole, from all the inquiry I have been able to make, I am fully of opinion, with the learned Astruc and others, that the Chincough, as it now exists, has not been described by any of the Greek, Roman, or Arabian Authors*.

One of the earliest authors, who has described

* Treatise on the Diseases of Children, p. 141.

Chincough, is our countryman Willis, who practised first in Oxford, and afterwards in London, and died in 1675. He speaks of it as being well known at that time by the name Chin-cough: that it was a disease to which children were chiefly liable; that it was epidemic, and occurred most commonly in spring and autumn. He remarks, that though it was seldom dangerous or mortal, it was apt to run its course in spite of every mode of treatment, and might be said to cease rather by time and change of season, than by remedies. He also informs us, that from the general want of success, when treated by the regular practitioner, this branch of practice had fallen chiefly into the hands of old women and quacks. He, however, notices several remedies, which he had found beneficial, the chief of which were bleeding, vomiting, purging and blistering. He also speaks of frights as being useful, with several other remedies, most of which can only be regarded as charms *.

Sydenham, who was partly the cotemporary, and partly the successor of Willis, in giving an account of the Measles of 1670, incidentally

* Willis de Medicamentorum Operationibus, sect. vi. cap. i.

mentions the Chincough. At that time it appears to have been well known in London, and considered in so formidable a point of view, as to require the most vigorous treatment.

How rapidly this disease has increased in London during the last century, will appear from the following abstract of the Bills of Mortality. In fifteen years, prior to 1717, we have only sixty three registered as having died of Chincough, and fifty six of Cough. In the next fifteen years these two diseases are thrown together, and the whole deaths by Chincough and Cough amount to six hundred and thirty two. In the next fifteen years, ending with 1746, they amounted to one thousand six hundred and ninety two. In the next fifteen, to two thousand seven hundred and fifty five; and in the fifteen years, ending with 1776, they amounted to no less than four thousand two hundred and fifty two.

However little may have been said of this disease by the Ancients, it is uncertain how long it has continued to afflict the human race. We have no certain account of its origin in any one country. In Britain it has prevailed from time immemorial, and in other countries, particularly

those of Europe, we have reason to suppose that it has done the same.

Dr. Rosenstein remarks, that in Sweden, this disease was well known. "From the Bills of Mortality," says he, "and the accounts kept of the mortality of certain diseases, we find, in the course of sixteen years, from 1749 till 1764 inclusive, 43,393 children to have died by the Hooping cough, which amounts to 2712 children in each year. In the year 1755, 5832 children were carried off by this distemper; but in years when it has raged with less fatality, about 1700 or 2000 are lost by it*." He does not mention the disease as being either on the increase or decline, nor does he give the smallest hint with regard to its origin in that country.

By the Tables at the end of this work, it will appear, that in Glasgow for the last thirty years, it has continued very uniform, but rather on the increase. In some years the number of deaths is greatly more than in others, but on the whole it has run pretty nearly about five, or from that to five and a half per cent. of the whole deaths in the City. The greatest number of deaths by Chin-

* On the Diseases of Children and their Remedies, p. 194.

cough in Glasgow, during the last thirty years, was in 1809, when they amounted to 259, or something more than eleven and a half per cent. of the whole deaths in the year. It is somewhat singular, that in the last twenty five years, there have been only six single months in which some have not died of Chincough; and in the last twelve years, not a month has elapsed without a death. Next to the Small Pox formerly, and the Measles now, Chincough is the most fatal disease to which children are liable.

A CONTAGIOUS DISEASE.

THE Chincough is a highly infectious disease, and seems always to arise from a specific contagion. There are, however, some few facts opposed to this opinion; but these seem to have but little weight against the great mass of evidence to the contrary.

Dr. A. C. Willey of Block Island gives the following statement. “ The Tussis-Convulsiva or Hooping cough occurred here in April 1805, and did not become wholly extinct till some time in autumn. What rendered it particularly worthy

of attention, was its being indigenous. It made its appearance over the greater part of the Island at the same time, and was untraceable to any apparent source. The insulated situation of this place is extremely favourable to observations, and the detection of facts of this nature, without the danger of deception; and has afforded in the present instance a fair demonstration, that the Hooping cough can originate without contagion. Indeed," he concludes, "I was inclined to believe that the rise and progress of this epidemic disease does not depend so much upon contagion as is generally imagined. The universal belief that the system, during the operation of Pertussis, generates a specific virus capable of communicating the disease, seems to have prevented the mind from looking any farther for a principle adequate to its production*."

The situation of an Island is certainly very favourable for ascertaining facts of this kind; but still there are so many sources of deception, that we can lay but little stress on a solitary instance. Other authors, as well as Dr. Willey, have hinted the same thing, but in these I think the facts still

* American Medical Repository, vol. x. p. 95.

less conclusive. On the whole, I see no room to doubt, that the Chincough is as much a contagious disease as either the Small Pox or Measles. What the nature of the contagion is, how it is transported from one place to another, and how it makes its impression on the body, we cannot pretend to say. That its degree depends on the state of the atmosphere is more than probable. We find it, for instance, more severe in some seasons of the year, and more fatal some years than others.

Dr. Sims remarks, "That the name infectious belongs perhaps as much to this disorder as to many of those to which it is applied, for there are few commonly spared in a family where it once gets an entrance*." "This disease," says Dr. Cullen "is commonly epidemic and manifestly contagious†." "Chincough," says Dr. Hillary, "from all the observations I have been able to make, seems to be equally as infectious to children as either the Small Pox or Measles‡." To these authorities I could add many others, but the fact seems to be so well established and

* Observations on Epidemical Diseases, p. 92.

† First Lines of the Practice of Physic, sect. 1402.

‡ Observations on the Air and Diseases of Barbadoes, p. 45.

so generally believed, that it could not serve any useful purpose.

PREDISPOSITION.

THE Chincough may be said to occur only once in the same individual, although to this there are some few supposed exceptions. All ages and constitutions are liable to its attack, though it is rarely met with, except in infancy and childhood, “Infants a few days after birth,” Dr. Hamilton remarks, “have been affected with this disease in consequence of being handled by those, who had been in a house, where the Hooping cough was prevailing‡.” This is a very striking proof how easily the contagion may be transported from one place to another, and how readily it may be communicated even to the youngest infant. But, as has been already hinted, infancy and childhood are not the only periods of life where the disease is met with. I have seen six children and their mother all labouring under Chincough at the same time; and Dr. Heberden in-

‡ On the Diseases of Infancy and Childhood, p. 170.

forms us, that he has seen it “in a woman of seventy, and in a man of fourscore*.”

Dr. Butter has given a variety of reasons why children should be more liable to Chincough, than those farther advanced in life; but none of them seem to have much weight. “The nervous system,” he remarks, “bears a much larger proportion to the other solid parts in children than in adults; their solid parts are likewise of a much softer texture, and of a much quicker growth; the human body is then endued with more irritability, than at any future period of its existence; hence we see why adults that have escaped this distemper in their infancy are seldom affected with it, and why those that happen to be affected with it, are chiefly women and persons of a delicate tender habit†.”

What appears to be the chief cause of its affecting infants is, that few individuals can pass many years of their lives without being so much exposed to the contagion as to bring on the disease; and if all, or most people, have it when young, we cannot have many opportunities of ascertaining the liability of adults. It seems

* Commentaries on the History and Cure of Diseases, p. 434.

† Treatise on Kinkcough, p. 49.

pretty certain, however, that in young children the disease is more severe than those farther advanced in life.—The following Table gives the deaths by Chincough, in this City, during the last THIRTY YEARS, arranged according to the ages of the patients.

TABLE.

Under six months,	135
Above six months, and under one year, ...	357
Above one year, and under two years,	596
Above two, and under three years,	333
Above three, and under four years,	186
Above four, and under five years,	109
Above five, and under six years,	37
Above six, and under seven years,	34
Above seven, and under eight years,	12
Above eight, and under nine years,	10
Above nine, and under ten years,	5
Above ten years,	3
<hr/>	
Total,	1817*

* This number includes only the Funerals in the High Church, College Church, and North West Burying Grounds, and may be considered as about the half of the deaths in Glasgow. At the time the Table was formed, the Author was not aware of Registers being kept at the other Burying Grounds.

It is more than probable, that the remarkable change which takes place at the age of puberty, in the larynx, trachea, and bronchiæ, may have no small share in either rendering the system less susceptible of the disease, or in rendering it less fatal when it does occur. Only three have died in Glasgow above ten years of age, out of nearly two thousand, and these three died between their thirteenth and fourteenth year. No deaths were found between ten and thirteen, and none above fourteen.

INFLUENCE OF CLIMATE AND SEASON.

With regard to the other predisposing causes of Chincough we know very little. It occurs, we have seen, at all ages and in all constitutions; I may add, that it is met with at all seasons, and in all climates. If there is any difference, it is perhaps more frequent in winter and spring, than in summer and autumn; and more general in cold, than in tropical regions. In warm climates, besides being less frequent, it is also less severe, and this is probably the true cause why it was scarcely, if at all mentioned by the Anci-

ents. I have been told by a native of France, that the term COQUELUCHE was familiar in that country, but he never had the disease himself, and hardly recollected of having ever seen it.

Contrary to this opinion, however, it may be remarked, that in climates still warmer than that of France, the disease has appeared in a very severe and destructive form. "Two epidemics," says Dr. Fretis, "prevailed in Madeira in the year 1808, introduced by the British troops forming the expedition under General Berresford. The first, and which spread immediately after the troops landed, was the Hooping cough; this epidemic destroyer of so many individuals in this colony, on that occasion, equally attacked those persons who had been vaccinated, and those who had not undergone that operation. Many of those who had been vaccinated recovered, and others who had not, died; as if proving the inverse of what had been asserted, that the fatality was equal with both classes *. The disease is also met with in America, in the West Indies, and perhaps in most other parts of the known world.

With regard to the prevalence of Chincough,

* Medical and Physical Journal, vol. xxiii. p. 100.

at different seasons of the year, some idea may be formed from the following Table. It contains the same cases given formerly, but arranged according as the deaths happened in the different months.

TABLE.

January,	- - - - -	179
February,	- - - - -	173
March,	- - - - -	208
April,	- - - - -	179
May,	- - - - -	188
June,	- - - - -	138
July,	- - - - -	89
August,	- - - - -	89
September,	- - - - -	98
October,	- - - - -	129
November,	- - - - -	158
December,	- - - - -	189
Total,	- - - - -	<hr/> 1817

From this Table it would appear that March has been the most fatal month; and that fewer die in the months of July, August, and September, than in any other part of the year.

It will be seen by the Tables at the end of this

work, that Chincough has proved much more fatal some years than others. The greatest number of deaths in any one year, is two hundred and fifty nine. This happened in the year 1809. The least number we meet with is in 1784. In that year they amounted to only thirteen; and in 1788, to seventeen.

Dr Rosenstien remarks, “that of 43,393 who died of Chincough in Sweden, 21,543 were males, and 21,850 were females, consequently the Chincough has proved a little more fatal to the weaker sex *.” Of the 1817 above given, the proportion of the females to the males is much greater. How far the same thing will hold in other registers, it might be curious enough to ascertain.

TABLE.

Males,	842
Females,	975
	<hr/>
	1817

* On the Diseases of Children, and their Remedies, p. 194.

THE EARLY SYMPTOMS.

THE Chincough generally begins like a common cold, attended with more or less fever. The lips appear full, some degree of hoarseness and sneezing succeed, with a redness or turgescence of the face, and generally a watery irritating discharge from the eyes and nostrils. The patient has a greater disposition to sleep than usual, some difficulty of breathing or oppression about the chest, with a hard dry cough. The appetite is somewhat impaired, attended with a costive or irregular state of bowels. The patient complains more than usual of cold, particularly in the back and extremities. After some days the reverse of this takes place, he then complains of thirst, and a sense of heat over the whole body, the skin feeling harsh and dry.

During the continuance of these symptoms there is occasional headach. The tongue is a little whiter and fouler than usual. The pulse is somewhat accelerated, and now and then irregular.

This febrile state, which attends the commencement of Chincough, resembles in many respects

the fever which precedes the Measles or the Small Pox. In some cases it is so mild, and continues so short, as hardly to deserve notice; in others it is more severe and protracted.

In the generality of cases, as the kinks begin to form, the catarrhal and febrile symptoms abate, and the patient in the intervals feels himself quite well; but in others the fever continues, the kinks are less regular, and in the intervals the patient is languid and oppressed. The tongue continues foul, and the appetite bad. The pulse in these cases is weak, excessively quick, and often irregular. The skin assumes a livid colour, while the patient's flesh and strength decline rapidly. This is one of the worst forms of the disease, and is most apt to occur in the young and plethoric. It is often fatal, for the danger is not apparent, till it is too late for any remedy to be of service.

It has been remarked, that the Chincough generally begins like a common cold. In some instances it continues in this form throughout the whole course of the disease. "I have had instances of a disease," says Dr Cullen, "which, though evidently arising from the Chincough contagion, never put on any other form than

that of a common catarrh *.” The same circumstance has occurred within my own observation, and Mr Burns remarks, that “ in young children, even death may take place, although the disease never fully forms †.”

DESCRIPTION OF THE PAROXYSM.

COMMONLY about the end of the second, or beginning of the third week, the symptoms undergo a very remarkable change. During the cough the expirations become extremely rapid and altogether involuntary. By the continuance of this process the air is suddenly expelled from the lungs, and the patient appears in danger of suffocation. At last he is relieved by a full and violent inspiration, generally accompanied with a stridulous noise, like the crowing of a cock, or the rapid passage of air through a narrow brazen tube. The convulsive expirations are again renewed, and the paroxysm, consisting of these two parts alternately, is continued till relief is obtained either by expectoration or vomiting. The

* First Lines of the Practice of Physic, Section 1406.

† Principles of Midwifery, &c. p. 541, 2d Edit.

matter rejected is generally a tough mucus, occasionally mixed with the contents of the stomach, and sometimes with particles of blood.

This manner of terminating the paroxysm, however, happens only in the more favourable cases; in the more severe, the paroxysm ends in the complete exhaustion of the patient, without any discharge whatever.

The expirations during the kink resemble those of a common cold; but are much more rapid and violent. The inspirations, in most cases, bear a very strong resemblance to those of well formed Croup. It is from the peculiar sound produced by the last of these processes that the disease has been termed *Hooping* cough. The *Hoop*, however, is in many cases completely wanting, and the patient feels no obstruction to the taking in a full breath. "I have said," observes Dr Butter, "that the Kinkcough is *generally* attended with a shrill inspiration; because it sometimes occurs without that symptom. Such a defect constitutes a variety of the disease, which may properly be denominated the *imperfect Kinkcough**."

* Treatise on Kinkcough, p. 3.

It may perhaps be owing to this difference in the nature of the kinks, that in the Bills of Mortality for London, particularly about a century ago, some of the deaths are arranged under the head of Chincough, and others under that of Hooping cough. Even in later periods, from the manner in which the two terms are introduced, one would naturally conclude, that two distinct diseases were meant. Be that as it may, with regard to the circumstance of having or wanting the *Hoop*, I have remarked a very striking difference, which deserves to be noticed. In one set of patients, we have the *Hoop* very long and distinct; but in these the expirations are less rapid and violent. The patient seems to gasp and strain, rather than cough. The face is dark coloured, the eyes are turned up, and there is generally a tendency to fainting or strangulation. The patients affected in this way are generally the very young and the plethoric. In the other set of patients, the expirations are rapid, and so very violent, that, to use the common expression, they look as if they would burst. The face in such cases, is of a bright scarlet colour, the eyes fiery and as if they would start from their sockets; but the inspirations are performed as soon,

and apparently with as much ease, as if nothing were the matter. Cases of this kind occur in the older and more robust.

These bursting kinks, as the disease advances, become less violent. The expirations produce a sort of barking noise, and the cough is less confined to regular paroxysms. Sometimes the expirations are of this kind from the beginning, and continue so throughout the whole course of the disease. Mr Burns perhaps alludes to this form, when he compares the cough to “the chattering of a monkey quickly repeated*.”

Dr Gregory, Sen. has noticed a very curious variety of the disease, of which Dr Kirkland gives the following account. “*Duos notavit casus celeberrimus noster Præceptor Gregorius, quibus non continuo tussiendo poroxysmo sonora inspiratio, sed loco inspirationis syncope superveniebat, et, aliquot horae sexagesimis post syncopen interjectis, demum subsequebatur, solito more, inspiratio et alter tussiendo paroxysmus†.*”

When the kinks are of the Hooping kind, the face, as I have already remarked, becomes swollen and of a dark purple colour, the veins of

* Principles of Midwifery, &c. 2d Edit. p. 541.

† *Dissertatio Inauguralis de Pertussi*, p. 3. 1772.

the head and neck are distended as if ready to burst, and the patient gasps, and has the appearance of sudden suffocation. If he remains long in this situation without making any noise, he is said to have taken a *dumb kink*. In those violent efforts the extremities become cold, a sweat breaks out on the forehead and temples, and even blood is frequently forced from the nose, mouth, ears, and eyes. In many cases, the patient is actually suffocated, falls into a faint, or is seized with convulsions. When the inspirations are long and very difficult, the patient is said to have fallen into the *back draughts*. This symptom is generally regarded as little better than the *dumb kink*, both of them shewing the disease to be of a very unfavourable nature.

We have seen that in children the form of the kink is very different; in adults we meet with a similar variety; but the hoop seldom or never occurs. The bronchial system, at this period, is perhaps incapable of taking on that morbid state on which it depends. In two young women between twenty and thirty, the kinks were very severe and frequent. The face was flushed, and the whole body much agitated; but there was no apparent difficulty in the inspirations.

In the lady's case, who had this disease along with her children, the kinks were of the same description; but accompanied with a most violent headach. These were the only adults I remember to have seen under the disease.

Dr Heberden remarks, that "adults are, as it were, overpowered at once upon the access of the fit, so that they fall down instantly, as in an apoplexy, but they very soon come to themselves; this is a distinguishing symptom of the disease in those who are grown up*."

Dr. Butter gives the case of a woman of thirty, the mother of several children, and at the time in a state of pregnancy. He does not mention any affection of the head among the symptoms, but remarks, that "Sometimes the fit was so severe as to threaten suffocation. She sometimes expectorated a white thick phlegm, and then the fit was short. A severe fit was always attended with a clear ropy expectoration. She complained also of pain in her right side, which sometimes shot through to the other, and sometimes downward, so as to imitate labour pain†." The disease was subdued in a short time by the

* Commentaries on the History and Cure of Diseases, p. 434.

† Treatise on the Kinkcough, p. 61.

use of hemlock and other remedies. The patient was afterwards delivered of a healthy child, and had a good recovery.

THE RECURRENCE OF THE PAROXYSMS.

THE kinks vary much in frequency, as well as in severity. They generally return after longer intervals, and are milder through the day than in the night. In many, they are seldom and mild at all times, while in others they are frequent and severe. In ordinary cases, after the kinks are formed, they return perhaps once every two hours; in worse cases every hour, every half hour, or oftener; in mild cases once in three or four hours, in some rare cases only once or twice a-day. "In the favourable cases of this disease," says Dr Hamilton, "there is no fever, no diminution of the appetite for food, no apparent deviation from the ordinary health; and the fits of coughing return only twice or thrice during the night, and during the day take place commonly after a full meal, or violent exercise, or emotions of the mind." Even in the best marked instances of the disease, which have come under my

observation, the kinks have by no means been strictly periodical. When they terminate in the free discharge of a quantity of tough mucus, either by expectoration or vomiting, the relief obtained is generally more perfect, and of longer continuance.

Sometimes the patients have all the kinks at a particular time of the day; in the morning, in the evening, or at midnight. Several cases described by Hoffman seem to have been of this kind. They happened in one family, and they were seized about the end of summer. The disease was so violent, that the face grew black, and they lay for some time without sense, motion, or respiration. “The fits were periodical, returning chiefly about ten in the forenoon*.”

Thus the kinks return at intervals, more or less regular, and generally without any obvious cause; but they may also be brought on sooner and more violently, by a variety of circumstances. Nothing does this more readily than fretting the patient, or putting him in a passion. Violent exercise, laughing, crying, swallowing food or drink, even turning from one side to an-

* Practice of Medicine, translated by Lewis, vol. ii. p. 12.

other in bed, or otherwise changing the posture of the body, has a similar, but less powerful effect.

In mild cases the kinks are single; but in some of the more severe, after short intervals, seldom exceeding a minute or two, sometimes only a few seconds, they recommence and run a similar course, two, three, or four different times. Hence the kinks are said to be single, double, triple, &c. as they happen to consist of so many different parts. Of these successive kinks, or parts of a kink, the first is generally the most severe; but it also happens, particularly where the patient is weak and exhausted, that the second, third, or fourth effort, is apt to terminate in a faint or convulsion. An approach to either of these is generally a very fatal symptom, though patients have often recovered from both.

After the very severe paroxysms, the patient breathes quick and seems much fatigued, or falls into a state of stupor. But in ordinary cases, even where the kinks are very violent, if there be no fever, he appears quite well, and returns to his play as if nothing had happened.

Though the paroxysms come on suddenly, the patient has generally more or less warning. Sen-

sible of the violence of the attack, he clings to whatever may happen to be nearest him; or by his looks and gestures, for he can seldom speak at the time, he supplicates the aid of those around. Even when the patient is lying in bed, it seems to give him a sort of relief to have his back and head supported. In most cases, where the strength is not much impaired, they incline to rise on their knees and stoop forward. This is perhaps the most favourable position that can be chosen; but with regard to this, the patients themselves are generally the best judges.

STATE OF APPETITE.

It has been remarked, that during the fever which attends the first or catarrhal stage, the appetite is considerably impaired; but after the fever abates, and the kinks are fully formed, it returns, and is often more craving than usual. This is particularly the case where the kinks terminate in vomiting. One quantity of food is no sooner discharged, than the patient feels an irresistible desire to take in another. In this way the whole day, and often a considerable part of

the night, is spent in alternate eating and vomiting. Such cases, however, generally terminate favourably. The case of my son* was an exception. For the first two weeks his appetite continued good, and he at least ate his ordinary meals. He vomited freely, and during the kinks he sometimes bled at the nose, which has also been regarded as a favourable symptom. I must add, however, that after the disease became more alarming, his appetite left him, his thirst became more urgent, and the vomiting ceased till near the fatal termination, when it again returned, probably in consequence of the inflamed state of the stomach.

It seldom answers any good purpose to impose restraints with regard to eating. The chief rule to be observed, is to give the patients mild articles of food, such as may be easily digested, and particularly such as may occasion least uneasiness in the rejection. On this account fluids are better than solids, and articles purely vegetable are better than animal food.

In place of eating, the patients have sometimes a frequent and strong desire to drink, and the

* See Case First, in the Second Division of this Work.

fluids thus taken in, are discharged in whole, or in part, at the end of each kink. This is by no means so favourable a circumstance as the desire to eat. It shews the presence of a considerable degree of fever, great irritability, if not inflammation, in the stomach, and when late in the disease, is generally a fatal symptom. The patients generally prefer cold water to every thing else. In a few instances I have found them excessively fond of butter milk. When the desire to drink is great, a free indulgence is generally hurtful. A tea spoonful or two will quench the thirst as well as a full draught, while it weakens and oppresses the stomach much less.

FEBRILE SYMPTOMS.

THE fever which accompanies the first stage of Hooping cough has already been mentioned. It is often very slight, and generally subsides as the kinks begin to form. After they are fully formed, it has been imagined that it wholly disappears. Hence Chincough has seldom been ranked among febrile diseases. Sydenham speaks of it as unconnected with fever, and in this sen-

timent he has been followed by many of our first practitioners. Dr Cullen, seemingly aware of Sydenham's error, and alluding to it, makes the following remark: "we have found the disease very frequently accompanied with pyrexia, sometimes from the very beginning, but more frequently only after the disease had continued for some time. When it does accompany the disease, we have not found it appearing under any regular intermittent form. It is constantly in some degree present; but with evident exacerbations in the evening, continuing till next morning *." But though Dr Cullen thus admits the frequency of fever in Chincough, it is obvious that he did not consider it as an essential part of the disease, otherwise he ought to have ranked it in his Class Pyrexiaë.

When Dr Cullen remarked, that he had not found the fever of Chincough appearing under any regular intermitting form, he very probably alluded to the following observations of Rosenstein. "The Hooping cough," says this author, "is sometimes attended with a fever, and sometimes without any perceptible one; but, as long

* First Lines of the Practice of Physic, Section 1410.

as it is not put out of its order by improper remedies, or any other accident, it will always be found worse every second day †." This is a circumstance which attends more or less almost all continued fevers. I have had the remark in view while attending cases of Chincough, but I cannot say that I have found it a very striking feature of the disease, though in some cases it is remarkable enough.

In so far as my experience goes, I am disposed to believe, that, even in the mildest cases, as long as the kinks continue, there is always some part of the day when the presence of fever can be detected. It may be so slight as hardly to deserve notice; but still, to an attentive observer, who has opportunities of seeing the patient day and night, it is abundantly obvious. I have remarked it even in those favourable cases, where the appetite continued good, and where the patients seemed to suffer little or nothing in their general health. Dr Darwin, though he does not speak of fever as a universal attendant, he remarks, that "this complaint is not usually classed among febrile disorders; but a sensitive

† Treatise on the Diseases of Children and their Remedies, p. 192.

fever may generally be perceived to attend it during some part of the day, especially in weak patients *.” In weak patients it is no doubt most remarkable, particularly in the state of the pulse, in the alternate heats and chills of the body, and in the flushings of the face.

In many cases, although we find that most of the febrile symptoms disappear, the appetite does not return, and the pulse continues uncommonly quick and small. The skin feels cool, and the patient complains of nothing, but great prostration of strength; sometimes of a tenderness, which makes him complain on being handled, even in the gentlest manner. On examining the tongue, it generally exhibits a considerable crust of mucus, which, after a few days, assumes a yellowish, brownish, or blackish tint, and the whole mouth puts on the appearance of typhus. Hoffman speaks of aphthous vesicles in the throat, want of sleep, no appetite even for liquids, and a constipated state of the bowels †. These are ~~are~~ all so many farther proofs, that the fever which sometimes accompanies Chincough, has a close affinity to typhus, and even typhus in its worst form.

* Zoonomia, vol. iii. p. 377.

† Practice of Medicine, translated by Lewis, vol. ii. p. 125.

Cases of this kind are very unmanageable; for while the great loss of strength, the state of the pulse, and other signs of debility, point out a tonic plan of treatment, or at all events, forbid the antiphlogistic; dissection has shewn, that even in these circumstances, the lungs are suffering extensively from inflammation. I treated two cases of this kind in the beginning of last winter; one of the patients died, the other recovered, but after a very doubtful and tedious illness. I was consulted in a third that recovered, and casually saw a fourth that died. In my former practice, I had seen many of the same kind, and always considered them as attended with great danger. I regret much that no attempts were made to have their bodies inspected; but from the similarity of the symptoms, in the commencement of the disease, to those of my daughter *, I am much disposed to believe the appearances would have been the same.

I have said that these cases are very unmanageable, I may add that they are also exceedingly deceitful, the patients being often in the last extremity before danger is apprehended. Of this

* See Case Second in the Second Division of this Work.

state of the disease the following passage gives a very correct picture. “ At this time they became dry, had a quick small pulse, and all the other symptoms accompanying a fever. They now daily got weaker, their legs or body became more or less œdematous, the cough gradually ceased, the difficulty of breathing became more urgent, sleepiness, &c. came on; and when the parents thought their children getting better, death convinced them of their mistake, by closing the scene with all the symptoms of a spurious Peripneumony †.”

There are three states of fever, which I have observed to attend Chincough, and which deserve particular notice.

The first is that anomalous febrile state, which accompanies more or less, even the mildest forms of the disease. Dr Darwin, agreeably to his theoretical views, calls it a *sensitive* fever. It seems to consist more of the inflammatory than typhoid type; but is perhaps a sort of compound of the two. The pulse at least would lead us to suspect so. In frequency it resembles the latter,

† Animadversions on a late Treatise on Kinkcough, p. 41. Supposed to be written by Dr Kirkland.

while in point of hardness it is more like what we meet with in inflammatory diseases, particularly those of membranous substances, such as the stomach and intestines. In almost every case of this kind, even where there is very little appearance of disease, the pulse is variable, easily accelerated on the least exertion; and at times becoming irregular, from very inadequate causes, such as speaking a few words louder than usual, turning suddenly in bed, or otherwise altering the position of the body. I have detected the presence of fever in Chincough more readily by this state of the pulse, than by any other circumstance whatever.

“A very frequent pulse,” Dr Ferriar observes, “quick at the beginning, but towards the height of the disease small and thready, attends the complaint in its whole course. This constant degree of fever sometimes destroys the patient by its continuance; sometimes death seems to be occasioned by effusions of blood into the head or lungs†.”

The second state of fever is that truly typhoid form, which I have been endeavouring to de-

† Medical Histories and Reflections, vol. iii. p. 219.

scribe. In this state there is nothing so remarkable as the quickness of the pulse. From being full and moderately slow, it passes at once to almost innumerable frequency, and is often so weak as hardly to be felt. In the case of my daughter, though I made the attempt at least a hundred times, I never could count twenty successive beats. In some other cases I have found less difficulty in this respect, but in all of them the quickness, smallness, and irregularity of the pulse is very striking. It is in fact such as we almost never meet with, except in cases where the inflammation is seated in the bronchiæ. We have it very distinctly described by Dr Badham in his account of Acute Bronchitis. If the disease," says he, "remains for a few days unsubdued by proper treatment, or have been hitherto neglected, all the marks of excessive action disappear, the pulse is no longer full or hard, it has become excessively feeble, and of almost countless frequency *." It must be remarked, however, that this quick feeble state of pulse is what accompanies the somewhat advanced, rather than the early stages, of Chincough.

* Observations on Inflammatory Affections of the Bronchiæ, p. 53.

The third state of fever we meet with is more decidedly characteristic of inflammatory action. The pulse is not so quick, but it is full and hard, attended with considerable difficulty of breathing, occasional pains in the chest, increased heat, loaded tongue, and all the other signs of pneumatic inflammation. Alarming, however, as these symptoms are, the disease in this form is much more manageable than when the pulse is quick and small. The path of practice is more obvious, and proper means are likely to be sooner resorted to. The chief danger, in these cases, arises from the tendency to suppuration and abscess. In many instances, in spite of the most active treatment, it has terminated in this way, and proved fatal.

STATE OF RESPIRATION.

In almost every case of the disease, the breathing is more or less affected. Even in the mildest cases the patient is sooner out of breath than usual. In the more severe he pants on the least exertion, as if he had run a race, or performed some great feat of bodily exertion.

I was particularly struck with this circumstance in the case of my son. Between five and six days before his death, having simply walked out of one room into another, when he began to read, he panted after every two or three words, as if he had run himself out of breath. I confess I was alarmed at the circumstance; but I must for ever regret, that my alarm did not proceed so far, as to make me at that time adopt more vigorous measures.

Dr Darwin seems to have formed a true estimate of the danger in such cases. “A peripneumony,” says he, “very frequently supervenes and destroys great numbers of children. When the child has permanent difficulty of breathing, which continues between the coughing fits, unless blood be taken from it, it dies in two, three, or four days, of the inflammation of the lungs. During the permanent difficulty of breathing, the Hooping cough abates, or quite ceases, and returns again after once or twice bleeding; which is then a good symptom, as the child now possessing the power to cough, shews the difficulty of breathing to be abated*.”

* *Zoonomia*, vol. iii. p. 377.

From the state of the pulse, and the state of the breathing, we can draw more certain conclusions, as to the nature and severity of the disease, than from any other circumstance whatever. I have never met with almost any case, where either the one or the other was much affected, where there was not very considerable danger; and none where the two symptoms were conjoined, that did not prove fatal, unless opposed by the most vigorous treatment.

\ THE HEAD AFFECTED.

I HAVE mentioned headach as a symptom which generally attends the commencement, or catarrhal state of the disease, but it is also very apt to continue more or less throughout the whole. Its becoming suddenly aggravated, or its coming on to a considerable extent, where it had not previously existed, is always an alarming circumstance. If not timeously relieved it is very apt to end in convulsions. This occurred in the case of Margaret Beaton,* and I met with another very

* See Case Third in the Second Division of this Work.

remarkable instance of it in the end of autumn last, of which the following is a short outline.

The patient was a very stout girl of five years of age. She had been ill of Chincough about three weeks. In that time she had a febrile attack, which had lasted for some days, but it had so far gone off, that she was able to walk a mile or more without much fatigue. After an exertion of this kind, she was seized on the Friday evening, with most excruciating headach. This continued all day on Saturday, and on Sunday morning she had several Epileptic fits. The headach became worse and worse, and the convulsions more and more frequent, till Monday, when she became insensible. After this the convulsions hardly left her till she died, which was on Tuesday forenoon.

Where I have met with the disease in adults, they have complained much of headach. All of the three patients, whose cases I have mentioned did so, particularly the old Lady. She complained that she thought her head would burst. Dr Herberden has also described the sudden and violent manner in which he found adults attacked with the kinks. "They fall down instantly," says

he, “ as if in an apoplexy *;” a very convincing proof that the head is much affected.

Dr Butter observes, that even “ a child not three months old, has been observed on the immediate approach of the fit to shrink as if terrified, to clasp a hand on each temple, and to press its head against its mother’s bosom †.”

Children are generally very anxious to have their heads held, and when nothing better has presented, I have seen them press it against the ground, or even against a stone wall. In the case of my son, he complained of his head at first; but after being bled he seldom mentioned it, till near his last.

In some cases, as I have already observed, children are remarkably desirous to have their heads held during the kink, but in other cases, I have seen it quite the reverse. In those of my son and daughter, though they at first seemed to wish their heads held, yet towards the fatal termination, they appeared uneasy at every thing which imposed the least restraint on the motions of the head. I think I have observed a similar change, as the disease advanced, in other cases. I have also re-

* Commentaries on the History of Diseases, p. 434.

† Treatise on the Kinkcough, p. 7.

marked too, that though some children dislike to have the motions of their heads impeded during the kink, they feel grateful on having them well tied round with a fillet or handkerchief.

With regard to this symptom, the Chincough bears a very striking resemblance to the Peripneumonia notha. “The cough often becomes extremely violent,” says Dr Wilson, “attended by a headach, which in many cases is almost intolerable, giving a sensation, to use Sydenham’s expression, as if the head were torn in pieces. This symptom is peculiarly characteristic of the disease *.”

STATE OF STOMACH AND BOWELS.

When the disease is mild, the bowels are little if at all affected; but in a majority of cases, they are found in a torpid state, and require particular attention. The preternatural secretion of mucus, though chiefly, does not seem to be wholly confined to the bronchial system. On giving an emetic, even at an early stage of the dis-

* Treatise on Febrile Diseases, vol. iv. p. 148.

ease, a great quantity of tough slimy matter is generally discharged from the stomach. This has been suspected to be merely what is there naturally, or what had been coughed up and swallowed; but this does not appear to be the case, for it is often met with in great abundance, before we observe the least expectoration. On giving a purge, especially to young children, we often procure stools consisting almost entirely of mucus. From these and other observations, it would appear that the secretions into the first passages, are not only altered in quantity, but also in quality.

Whether their torpor depends on this, or on other causes, cannot easily be determined; but be that as it may, one thing is certain, that the bowels in many cases of Chincough, are almost as unmanageable as in confirmed Croup. In a few instances, I have found the disease attended with diarrhœa. When this has come on early, and been moderate, it seemed to prove useful. When late in the disease, and frequent or profuse, it has done harm. When the matter passed is very dark and foetid, and particularly when it has the appearance of small fragments of membranes diffused through it, it may generally be regarded as

a bad symptom. If the bowels are very open, the patient is apt to have involuntary stools during the kinks. I had once a patient where this was an exceedingly troublesome symptom, but where he nevertheless did well. What added to the distress was a constant tendency to prolapsus ani.

On the whole, it may be remarked, that whether the bowels are costive, or the contrary, we never can pronounce the patient out of danger, till we procure something like natural fæces.

I observed a very remarkable difference in the cases of my son and daughter, with regard to their stomachs and bowels. In the former, after the disease put on its more alarming appearances, we could not by any means procure the least particle of real fœculent matter, though purgatives and clysters of every kind were most assiduously employed. The clysters came away nearly in the state in which they were given, and the purgatives, when they seemed to operate, only produced a little brownish foetid water, containing a quantity of shreds, like rotten flesh or putrid membranes. On a more near inspection, these appeared to consist of inspissated mucus. In the latter case, purgatives had the usual effect. The quantity procured was often small, as might be

expected from the little nourishment she took, but it was natural in smell and appearance. In my son's case, the desire to drink was very great, particularly towards the fatal termination; at the same time the tendency to vomit became more frequent and severe. In my daughter's case, the desire to drink was less frequent, she was satisfied with a smaller quantity, and never showed the least tendency to vomit. In the last case the stomach and bowels were quite sound; in the first they had suffered extensively from inflammation.

In almost every case, as Dr Heberden remarks *, the patients are very much troubled with flatus in the stomach and bowels, and very often they have an idea that the cough proceeds from that cause alone. In proof of this, they tell you, that if the wind be expelled or subside, the kinks become less frequent and severe, and that they increase with a return of the flatulence. It is difficult to determine the nature and extent of the connection between the two complaints, but there can be no doubt that the one is much aggravated by the other.

Owing, no doubt, to this flatus, and to the

* Commentaries on the History and Cure of Diseases, p. 434.

stress of the kinks, hernia has often appeared for the first time during Chincough, and in those cases where it was present before, it has been much aggravated. I met with a very troublesome case of this kind some years ago, where the patient had laboured under umbilical hernia from her infancy. A variety of bandages were tried, but to very little purpose. Nothing did so well as the hand of an assistant applied to the part during the kink.

STATE OF OTHER EXCRETIONS.

THE state of the urinary secretion is often much affected. On being first called in, I have usually found the urine deficient in quantity; of a high colour, when newly made, and becoming thick and turbid on cooling. As the disease becomes worse, these symptoms generally become more remarkable, and the patient is often teased with a frequent and urgent desire to make urine, while the quantity voided amounts to little or nothing. I have almost invariably found these to be bad symptoms; whereas when the secretion becomes more copious, and the power of retain-

ing it greater, the patients have generally done well.

In a considerable number of the worst cases which occurred to me last season, this frequent micturition was a most troublesome symptom. In some of them indeed, the patients had almost a constant desire, so that they were no sooner laid down in bed, than they required to be lifted again. I have known this operation repeated six or eight times in an hour, while the whole urine voided would not have amounted to an ounce; sometimes voiding only a few drops, and sometimes nothing at all. This has often happened, when it could be traced to no assignable cause. Even when blisters were applied, I have not found them more apt to produce strangury than in other cases.

In mild cases the functions and appearances of the skin, are little, if at all altered; but in the more severe cases, I have found it uncommonly dry, and insensible to the touch. Some patients have a pale lucophlegmatic appearance from first to last; others have the skin, particularly that of the face and extremities, of a livid or dark colour. I consider both of these symptoms as very bad; but the last is the worst of the two.

In some cases the face is swollen from the first; in others, some degree of swelling comes on during the progress of the disease; and in almost all the bad cases, œdema of the feet and hands occurs before death.

If the patient was previously subject to any cutaneous eruption, it is apt to disappear, which is always an unfavourable symptom. In all cases, a return of the natural moisture and sensibility, to the skin, and the re-appearance of the original, or any other eruption, are the usual forerunners of an abatement or termination to the disease *.

While the catarrhal symptoms continue, and even for some time after the kinks are formed, the patient expectorates little or nothing. What he does cough up is merely a little thin colourless mucus, and this comes more probably from the fauces than from the lungs. After some time the sputa become more abundant, more tenaceous, of a whitish colour, and mixed with air-bubbles. Sometimes we find them interspersed with little streaks of blood. Sometimes the patient has actual hemoptysis to a considerable extent.

* In one instance where the disease proved fatal, the attendants observed to me that the nails of the fingers and toes grew remarkably fast, and became incurvated like a person's in Consumption.

My friend, Mr. Russell, Surgeon in this city, mentioned a case of this kind which occurred to him lately, and where the patient did well. I have seen a few cases of the same kind; but on the whole, I am disposed to regard any mixture of blood as a bad symptom, though it generally gives a temporary relief to the breathing.

Towards the height and termination of the disease, the expectoration becomes much more profuse, and assumes a purulent appearance. Sometimes it consists almost entirely of a gross fluid, like cream. A gradual succession of these different states of expectoration is a favourable sign; but the coming on of a purulent expectoration very suddenly, or at a very early period of the disease, is the reverse, particularly where there is not a corresponding abatement of the symptoms in other respects.

It is also a bad sign when the cough continues long in a hard dry state, with little or no expectoration. Such cases usually terminate in pneumonic inflammation, or the formation of tubercles.

I have noticed a very remarkable difference in the state of the secretion from the nose in different patients. In some instances, I have found it very profuse. It was so in the case of my son, he

required to have his nose blown after every kink. In the case of my daughter, the nostrils were quite dry, and so itchy, that she could hardly be kept from picking them. Of these conditions, I regard the dry itchy state as the worst of the two. It generally denotes a more considerable degree of fever.

TERMINATION OF THE DISEASE.

Nothing can be more uncertain than the course and event of this disease. In the mildest form in which it appears, it usually continues for two, three, or four months; in the more severe, it may last twice or even thrice as long. I have met with several cases where it continued more than a year, and yet the patients recovered. Even after it has nearly or wholly ceased, an accidental exposure to cold often occasions a return of the disease.

At times the symptoms suffer very great exacerbations and remissions, owing perhaps to changes in the weather, and often without any very obvious cause. On this subject the following observation is made in the Edinburgh Medical

Essays. “It is worthy of remark,” says the author of this article, “that both common and convulsive cough, after being milder in January 1735, suddenly became much worse in the first week of February, and continued so the greater part of that month, gradually decreasing afterwards as the spring advanced*.” Similar remarks have been made by other writers.

In the worst cases, many weeks or even months elapse, before the disorder suffers the least abatement; and the return to strength, when the patient does recover, is slow and uncertain. In many cases, after the most unequivocal signs of recovery, death has suddenly occurred, while in others almost every fatal symptom has been present, and yet the child has recovered.

In forming an estimate of the danger attending Chincough, much depends on the age and constitution of the patient, on the violence of the symptoms, and not a little on the season of the year.

It has generally been said that the younger the child is, so much the greater is the danger. This rule, however, is not without many excep-

* Edinburgh Medical Essays, vol. iv. p. 26.

tions. I have almost always found that a healthy child at the breast, suffers as little from the disease as at any other age. The same remark appears to have been made by other practitioners. “A child of two or three months old,” says Mr Moss, “will often struggle through it as safely as an older child*.”

It has been said that the great danger in children, arises from their not spitting out the tough phlegm as soon as it is coughed up†. Some suppose that this danger proceeds from the mere quantity accumulated in the stomach and bowels, from its becoming excessively viscid, and from its acquiring a peculiar acrimony; while others imagine that the seeds or essence of the disease being blended with the phlegm, the disease must be transplanted from one place of the body to another, like the matter of gonorrhœa, or the poison of lues. The last of these conjectures remains to be proved; and as to the first, I can see no difficulty in expelling the mucus from the stomach or bowels of an infant, more than from the bowels of one farther advanced.

* Essay on the Management of Children, &c. p. 281.

† Animadversions on a late Treatise on Kinkcough, p. 40.

The danger in general arises from not being aware of the fatal nature and progress of the disease, till it is too far advanced for any remedy to be of service. The chief circumstance to be dreaded in the cases of infants, is the concurrence of some other disease, such as teething, a disordered state of the bowels, and other affections, to which this period of life is so peculiarly liable.

When Chincough proves fatal in very young children, it is generally by inducing suffocation, convulsions, or by bringing on such a state of debility, that the patient seems to expire from pure exhaustion. When the child is somewhat farther advanced, the symptoms of pneumonic inflammation are more obvious, though in many cases, still so obscure, as to have deceived some even of our best practitioners. Dr Armstrong, speaking of one of his patients, makes the following remark, “ She had been let blood of once, but sparingly; but as she had been ill so long, and I found her so much weakened, I durst not venture to repeat it, though I was sorry afterwards I did not; because on opening the body, I found the lungs, especially in the back and lower part, had been a good deal inflamed, but without any appear-

ance of suppuration or gangrene *.” The cases which terminate in this way, are as common in children a little advanced, as in the very young; and I may add, that they are more apt to occur among the healthy and robust, than among those who are naturally delicate.

When the patient is labouring under some other disease at the time, or when he is still weak from having lately recovered from one, Chincough is apt to prove both severe and tedious. I have seen this often after the Measles, Scarlatina, and Small Pox, and I have also seen bad cases when it supervened on a diarrhœa, obstinate constipation, cutaneous eruptions, and various other diseases, both acute and chronic.

The Chincough is sometimes completely interrupted by the coming on of some other diseases. I have met with cases of this kind, both from Measles and Scarlet Fever. It has also occurred from the Small Pox, and some other acute diseases; but perhaps more frequently from Measles than from any of the rest. The following very interesting case is given by Dr Ferriar of Manchester. “ Miss ———, aged one year, had the

* Essay on the Diseases of Children, p. 104.

Hooping cough, in a slight degree, for some weeks. When it seemed to be leaving her, she was seized with the Measles, and there was the appearance of a very large crop of the eruption. Her cough was not very troublesome, and no longer resembled the Hooping cough. On the third day she was seized with an extreme degree of dyspnœa, and a short harrassing cough, and the eruption almost entirely disappeared. The pulse became innumerable. Leeches were applied to the extremities, blisters were applied to different parts of the body, and every method was used to renew the eruption, but without success. The cough increased, but the dyspnœa began to relax, and at length to my great satisfaction, the type of the Hooping cough was renewed, and my patient was recovered by time and change of air*.

I have great pleasure in quoting the above case; because it gives a clear picture of that exceedingly critical situation in which a patient is placed, by the coincidence of the two diseases. It also points out in a striking and forcible manner, the remedies which ought to be resorted to,

* Medical Histories and Reflections, vol. iii. p. 217.

and that promptitude, and perseverance, which alone are capable of giving even a chance of success. I met with one case, not unlike Dr Ferriar's; but where the result was less fortunate.

In scrophulous habits the disease is not so apt to prove suddenly fatal; but if it be severe and protracted, it generally ends in some affection of the glandular system, laying the foundation for *Tabes Mesenterica*, *Rickets*, or *Pulmonary Consumption*. When any of these affections are present at its commencement, it is very apt to prove fatal, though I have seen many instances where the disease was mild, even in very scrophulous families.

The season of the year is generally a matter of the greatest consequence in forming our prognosis. We often find the disease mild and manageable, often indeed requiring little or no treatment, when it comes on late in the spring, in summer, or very early in autumn; whereas in the other half of the year, it is generally of a very different description. Besides the time of the year, the season's proving cold, warm, wet, dry, or otherwise, has a powerful influence. The drier and milder the season, so much the better.

In forming an estimate therefore of the length of time the disease may continue, or of the danger which may attend it, all these circumstances must be carefully taken into account.

DIAGNOSTIC SYMPTOMS.

There is hardly any disease for which Chincough can be mistaken. Willis, indeed, seems to confound it with Asthma, from their being both convulsive diseases. And Dr Millar probably from a similar train of reasoning, has considered the two diseases so much akin, that he has laid down nearly the same plan of treatment for both*. But even to the most superficial observer, they must appear widely different. The one proceeds from a specific contagion, and occurs only once in the same individual. The other is often a hereditary disease, often proceeds from ordinary causes, and when it does appear, it is apt to continue for life. The one is a disease, as we have seen, almost peculiar to the ages below puberty; while the other seldom occurs till manhood, and

* Observations on the Asthma and the Hooping cough, p. 127.

most generally, indeed, not till the decline of life, and sometimes not till old age.

The symptoms of the two diseases are not less distinct than their causes. Dyspnoea occurs in both; but in the one there is no cough during the paroxysm, in the other there is a cough, of such a peculiar kind, as to distinguish it from any other disease. It must be granted, however, that Chincough sometimes terminates in Asthma, and that many of the remedies which relieve the one, are beneficial in the other.

In the commencement, Chincough may readily be mistaken for a common cold. But at this period a mistake can be of little consequence, the same plan of treatment being applicable to both.

Mr Burns describes a particular kind of cough, which he says may be mistaken for Chincough. I am not certain whether I have seen that affection or not; he describes it as follows. "There is a cough very like Hooping cough, and which gives rise sometimes to the groundless fear that the child is going to take that disease; or on the other hand, if somewhat prolonged, it may pass for the Hooping cough, and afterwards the child being exposed to the infection, takes the disease, and is said to have had it twice. This kind of

cough has less of the suffocating appearance than the Hooping cough; the expirations are fewer, and do not follow each other so quickly, and with the distinct hooping sound. It sometimes succeeds Measles, or appears as a kind of Influenza*.

Dr Cheyne describes a sort of epidemic Peripneumony of children; which is also accompanied with a cough, dyspnœa, a quick pulse, and some of the other symptoms of Chincough. I have seen many instances of this, and am disposed to think that it is probably the same to which Mr Burns alludes.

“ After the fever and the quick and interrupted respiration is subdued,” says Dr Cheyne, “ this cough continues for a considerable time, and resembles Hooping cough so much, that for some time the cough has been thought an attack of Hooping cough. The cough comes on in fits with confined inspiration. The fit of coughing is repeated, and the cough is always most troublesome in the night; yet in a week or two the cough subsides. If children have lately recovered from Hooping cough, the cough from the beginning

* Principles of Midwifery, &c. 2d edit. p. 544.

of this Peripneumonic complaint, occurs in suffocative fits *."

It is chiefly in the beginning, that there can be any doubt about the nature of this complaint. It generally runs a more rapid course than Chincough, and is attended with a higher degree of fever. Dr Cheyne speaking farther on this same subject remarks, that "in an infant three or four months old, there are eighty or ninety respirations in the minute. The pulse is two hundred, firm and regular; if the child's hand is grasped, the pulsations may be felt even in the fingers." This is a much higher degree of fever than usually attends Chincough. It may be added too, that though a mistake were to take place, it would lead to material error in practice, the plan of cure being much the same in both, and modified only by the violence of the disease.

SYMPTOMS OF BRONCHITIS.

I HAVE already remarked that there is a very striking resemblance between most of the symp-

* Pathology of the Larynx and Bronchiæ, p. 192.

toms of Chincough and those of Bronchitis. As I conceive this to be a point of great practical importance, I trust the reader's time will not be ill employed in taking a more minute review of the subject. The best way in which this can be done will be to give a short abstract of the symptoms of Bronchitis, as detailed by Dr Badham, and then point out some of the most remarkable circumstances in which the two diseases agree.

Dr Badham sets out by dividing Bronchitis into three species, the *Acuta*, *Asthenica*, and *Chronica*. It is with regard to the two first of these that the analogy chiefly holds, the last applies merely to chronic coughs.

Asthenic Bronchitis. “ After exposure to cold and some incipient feelings of disorder, which the patient does not particularly advert to, he finds considerable oppression and uneasiness in breathing, which is in some instances attended with an obtuse pain about the præcordia, or by a general sense of weight, anxiety and tension all over the chest. The respiration is commonly more frequent than is natural, and is attended very generally with a whizzing noise peculiar to affections of this description. If the patient be desired to make a deep inspiration, and to ex-

tend the chest to its full capacity, his effort is either interrupted by a fit of coughing, or if accomplished, his uneasiness is increased, and the pain, if any existed, is aggravated. There is no sharp pain in the side, but rather a diffused sensation of soreness. The dyspnœa becomes more considerable, if the patient attempts to lie down, and he therefore usually adopts from choice, a posture more or less deviating from the horizontal, but is commonly able to rest on either side indifferently.

“ In addition to this constant dyspnœa, there are cases in which a symptomatic Asthma is superinduced. The patient is subject, three or four times in the day, to a manifest aggravation of the difficulty in breathing, a sudden constriction across the thorax is complained of, and sometimes prevails to so great a degree, as to prevent the voice from being articulate. In a short time, however, this spasmodic exacerbation remits, and the complaint resumes its usual level.

“ At the same time with the dyspnœa, or soon after, a cough commences which is at first unattended with expectoration, and often remains obstinately so, for the first two or three days: it is frequently, but by no means so constantly as

might be expected, attended with a hoarseness. If the disorder takes a favourable turn the expectoration of a thick, whitish, frothy mucus comes on, and greatly relieves the symptoms.

“ This disease is very generally attended with headach, and sometimes this symptom is so severe that the patient’s attention chiefly rests on it. It is of a particular kind too. A violent tensive pain above the eye-brows, just across the forehead, intolerably aggravated by every fit of coughing. The tongue invariably exhibits some deviation from the natural state. The digestive powers are at a stand: the patient is not merely indifferent to food, but he commonly loathes it as much as in ideopathic fever; he has thirst, but it does not appear to be urgent. The urine is constantly loaded, turbid, and high-coloured.

“ The pulse in this disease is not so correctly the measure of its force and urgency, as in some others. It has sometimes all these characters of hardness, fulness and frequency, which indicates the state of circulation in highly inflammatory affections. But it is more usually that sort of pulse, which we find connected with the acute rheumatic affections of the metropolis, increased

in frequency, diminished in strength, with some hardness.

“ The heat of the surface is often not much increased, except towards evening, when, as in other febrile affections, the patient becomes hot, restless and uneasy. The skin is however in an obstructed state, and it is often difficult to excite diaphoresis *.”

Acute Bronchitis. “ An attack of Bronchitis Acuta comes on more suddenly, and shews its formidable character from the beginning. The patient is attacked with a sense of constriction, or other uneasy feeling at the chest, his breathing is hurried and painful, and becomes more and more laborious, till at length an orthopnoea is completely established, and the efforts of all the voluntary muscles, which can be called into action, render the oppressed state of the lungs sufficiently evident. The countenance is full of anxiety, the nostrils are seen in perpetual motion, nor is it easy to conceive a more distressing spectacle than a patient under this attack exhibits. Cough soon succeeds, and though some expectoration attend, there is little or no relief

* Observations on the Inflammatory Affection of the Mucous Membrane of the Bronchiæ, p. 34, &c.

derived from it. The state of the tongue and of the urine, though liable to variety, all unequivocally indicate the phlogistic diathesis; and the moment the pulse is felt, the necessity of immediate venesection is obvious. Wheezing is not a constant, perhaps not a common symptom.

“ If the disease remains for a few days unsubdued by proper treatment, or have hitherto been neglected, all the marks of excessive action disappear, the pulse is no longer full or hard, it has become excessively feeble, and of almost countless frequency; partial sweats break out at intervals; the patient spits up an immense quantity of yellow sputa, till from feebleness he can expectorate no longer, and then the secretion accumulates in the bronchiæ till he dies. The last hours, in some cases, exhibit the *luctus cum morbo* in a frightful degree of violence, and the patient often becomes delirious before he sinks under it.”

To this very accurate description of the two forms of the disease, Dr Badham has added a variety of cases, highly illustrative of the account he has given; these we shall notice in a subsequent part of the work. He concludes the whole

with the following enlightened and judicious remarks, on the probable connection between this disease, Croup, the secondary pectoral symptoms of Measles, and Chincough.

“ There seems,” says he, “ to be a striking analogy between this disease and the Cynanche Trachialis. It is in fact an extension of the inflammation, which in Croup is confined to the trachea. The analogy is in no respect more striking than in the marked division of both diseases into two stages, in the latter of which, we are mere witnesses of the resistless power of a disorder, against which we are destitute of remedies. All that can be done in either case, must be done at first.” Dr Badham goes on to remark that,

“ It seems in the highest degree probable, that the secondary pectoral symptoms of Measles, and the dyspnœa which supervenes in Hooping cough, have usually their origin in this affection of the bronchiæ *”.

Having made these long extracts from Dr Badham’s valuable work, I shall conclude the present head, by simply enumerating the particulars in which the more severe forms of Chincough

* Observations on the Inflammatory Affections of the Mucous Membrane of the Bronchiæ, p. 65.

resemble Bronchitis.—The insidious, and at other times the abrupt manner, in which the disease comes on—The hurried and oppressed breathing, with a sense of weight, but little or no acute pain in the chest—The periodical returns of the difficulty of breathing, occasioning a suppression of the voice, violent exertions of the muscles of respiration, dreadful anxiety, dilatation and contraction of the nostrils—The hoarseness and general tenderness of the chest; the accession of cough and the changes in the state of the expectoration—The state of the tongue and the digestive organs—The temperature of the body; the nature, frequency, and severity of the headach; the state of the alvine, urinary, and cutaneous excretions—And finally, the very peculiar state of the pulse, and the changes it suffers in the different stages of the disease. The reader will be still more struck with the similarity, when he comes to peruse the cases in the following Division.

THE NATURE

OF

CHINCOUGH.

OPINIONS OF EARLY WRITERS.

I ONCE proposed giving an historical account of the different opinions, which have been formed with regard to the nature of Chincough; but I have found them so exceedingly fanciful, and so enveloped in the pathological mist and jargon of former times, that I have determined to confine this part of the subject, within very narrow limits. I shall only notice the theories of a very few of the more celebrated pathologists, and particularly such as have excelled in practice as well as theory.

It has been supposed by some that the ancient Greek, Arabian and Roman Physicians were ac-

quainted with Chincough, and that an account of its symptoms, at least, may be collected from their writings. On this subject I have already expressed, my doubts. At all events, till the time of Willis, we find no attempt to ascertain its seat, or point out the nature of the disease.

This author, according to his own pathological views, and the prevailing opinions of his time, considers it as a quick, vehement irritation of the lungs, by which they are stimulated to throw off something that gives uneasiness. That the nerves and motive parts of the thorax, are predisposed to convulsions. That a convulsive cough is thus excited, exceedingly injurious to the functions of respiration. The cause of this cough, is the escape of the serum from the other parts of the blood. Its being distilled into the cavity of the trachea, and the whole of the bronchial system.

So far there is something like truth in his theory. It does not appear whether this opinion was drawn from dissection, or whether it had its origin in pure hypothesis; but, granting it to be from the former, he might easily mistake the inflammatory exudation in the trachea and bron-

chiaë, for simple serum, thickened and smeared over the parts.

When he goes on to point out the dependance of this state of the thorax, on a certain condition of the brain and nervous system, the modern reader loses sight of him entirely. It may be quoted, however, as a fair specimen of the theories which were entertained at that time, not only with regard to Chincough, but with regard to diseases in general. “The convulsive disposition of the moving parts, as in other convulsive distempers, seems to proceed from a heterogene and elastic matter, falling from the brain through the nervous passages, together with the nervous liquor, into the small moving fibres of the breast; wherefore, when the spirits contained in those little fibres are stirred, to perform violent motions of breathing out, they pass into convulsive motions*.”

Even the celebrated Sydenham, though in general an enemy to theories, was not without his peculiar sentiments, respecting the nature of this disease. Speaking of purging, he remarks, “That such gentle and gradual evacuations effect the

* Operation of Medicines in Human Bodies, part ii. p. 40.

cure, as I imagine, by easing the lungs, which, though they are not found in this distemper, to contain much of any serous humour, yet are forced into their violent fits of coughing, by fervid and spirituous vapours, thrown upon them at certain times by the mass of blood; and are therefore best relieved, by directing those vapours through the lower bowels, and breaking their force by a contrary direction*.”

From what has been said, it is abundantly evident that Willis and Sydenham considered the Chincough as chiefly seated in the chest. Harvey, however, considered it more as a disease of the stomach and alimentary canal, and in this sentiment he has been followed by several moderns. “That continuous membrane,” says Dr Butter, “which invests the whole tract of the first passages and lungs internally, seems in general, to be first affected by the miasms or contagious particles of all epidemic diseases; though each particular infection acts more specifically in one part of it than another. In like manner, it is highly probable, that though the miasms of the Kinkcough may, perhaps, affect the whole of

* Swan’s Translation of Sydenham’s Works, p. 321.

this widely extended membrane by sympathy, or otherwise; yet some part of the intestinal canal is the principal seat of the disease*.” This theory the Dr goes on to support, by a great variety of arguments drawn from analogy, and other sources; but nothing like positive proof. He however concludes, that “it is rendered highly probable that the seat of the Kinkcough is in the guts†.” The precise nature of this affection of the guts, he has not condescended to explain. It may be inferred, however, from some other parts of the work, that it consists chiefly in relaxation and debility.

“As for my part,” says Dr Astruc, “I may positively affirm, that it principally consists in the inflammation of the superior part of the larynx, and pharynx, and more particularly of the latter, which is sometimes ulcerated, with a constriction of the glottis, as dissections prove. But it may be said, that the breast seems to be really affected in this case; otherwise, whence could proceed the obstinate cough? Though the breast is not really affected, yet by the laws of sympathy, through the irritation of the pha-

* Treatise on Kinkcough, p. 20.

† ib. p. 46.

rynx and larynx the cough is induced, as we see all the organs of respiration, put into action by the simple irritation of the petuitary membrane. But as it is caused by no morbid matter in the lungs, the patient expectorates little or nothing at all. The cough is obstinate, because the indigestions which produce it, are likewise so. The patient is in danger of suffocation at every inspiration; because since he expires almost every instant, he has occasion for a great quantity of air, which endeavours to enter by the contracted glottis with precipitation and suddenly; for it is probable, that the same cause which irritates the œsophagus, produces also a convulsive contraction in the glottis; because we find that by contracting the latter voluntarily, when in good health, we may mimick those children which have the Chincough.”

After some farther discussions of the same kind, he concludes, that “ The lungs by degrees begin to suffer, and become weaker by the violence of the cough, till they are at last ulcerated, and the fever degenerates into one of the slow and phthisical kind, the pus being absorbed *.”

* Treatise on all the Diseases incident to Children, p. 142, &c.

Dr Burton supposes the disease owing to too great a laxity in the body, hence children are more liable to it than adults. Their food being always of a crude mucilaginous nature, tends to the same end: The chyle is therefore crude, the lungs weak, the blood thick and viscid, the glands relaxed, the primæ viæ filled with phlegm. On the whole, he concludes that “this disease is caused by a great quantity of thick phlegm obstructing in, and adhering to the lungs and parts adjacent; and that the phlegm is caused by a laxity of the fibres and diet †.”

Dr Burton, though a late writer, seems to be a firm believer in all the tenets of the Humoural Pathology. On these he builds his notions of disease, and from these he forms his indications of cure.

OPINIONS OF LATER WRITERS.

I shall now proceed to notice the opinions of some of our more modern systematics.

Though Dr Cullen has given a very full, and

† Essay on Chincough, subjoined to his Treatise on the Non-naturals, p. 347.

perhaps the best account of the disease, that has appeared; yet he says little of its seat or nature. From the place it occupies in his Nosology, however, we can easily see that he considers it as nervous and spasmodic. “ It does not, like most other contagions,” says he, “ necessarily produce a fever; nor does it like most others, occasion any eruption, or produce otherwise any change in the state of the human fluids. It has, in common with the catarrhal contagion, and with that of Measles, a peculiar determination to the lungs, but with particular effects there, very different from those of the other two *.” What these particularities are, he leaves the reader to find out from the history of the disease.

Dr Brown, like every mere theorist, speaks most decidedly of the nature of Chincough, and the method of cure. “ Chincough,” says he, “ is attended by a contagious matter, which varies in degree; but so, however, that a sthenic plan of cure adapted to the degree of the disease, *for certain* cures it. The change of climate or situation is a tale; the practice of vomiting, death. Indeed, since the disease is an asthenia, vomiting,

* First Lines of the Practice of Physic, Section 1402.

which is so very debilitating an agent, cannot fail to be of the highest detriment *.”

We find the same ravings among his followers, and the same disregard to experience and observation. “I shall not hesitate to define it to be a disease of clear and evident debility; and one which never takes place, but in those who have either been previously weakened by some other disease, or who, from some unknown or unforeseen cause, are predisposed to this state. The persons most liable to it are those who possess a weak lax fibre; who use little exercise; and in fine, those who, from whatever cause, have a deficient perspiration †.” Nothing can be more absurd than this statement. The weak may occasionally suffer most from the disease; but even the most robust are as liable to it as others, and if I were to judge from what I have seen, I would say, that in them it is equally fatal. Mr. Jones seems to bear the same antipathy against vomiting, and other evacuations, which his master has so strongly expressed.

* Brown's Elements of Medicine by Beddoes, vol. ii. p. 241.

† Observations on the Tussis Convulsiva, by J. G. Jones, p. 12.

The last author whose opinions I shall notice, is Dr Darwin. Though this writer, on most theoretical subjects, is visionary enough; yet in this instance, he appears to have had as correct views as any of his predecessors. He conceives the disease to be of an inflammatory nature, to be chiefly seated in the mucous membrane of the bronchiæ and air cells, and to have a close affinity to the Superficial or Bastard Peripneumony. The following is his own account of the matter.

“Chincough resembles *Peripneumonia Superficialis*, in its consisting in an inflammation of the membrane which lines the air vessels of the lungs; but differs in the circumstance of its being contagious; and is on that account of very long duration, as the whole of the lungs are probably not affected at the same time, but the contagious inflammation continues gradually to creep on the membrane. It may in this respect be compared to the ulcers in the pulmonary Consumption; but it differs in this, that in Chincough some branches of the bronchiæ heal, as others become inflamed.—A Peripneumony very frequently supervenes, and destroys great numbers of children.” Again he remarks, “The Chincough seems to resemble the Gonorrhœa Venerea in several cir-

cumstances. They are both received by infection, are both diseases of the mucous membrane, are both generally cured in about four or six weeks without medicine. If ulcers in the cellular membrane, under the mucous membrane occur, they are of a phagedenic kind, and destroy the patient in both cases, if no medicine be administered *."

ADDITIONAL REMARKS.

FROM what has been stated, it would appear that there has been much diversity of sentiment, with regard to the seat and nature of Chincough.

By some it is placed in the air-vessels of the lungs, by others in the alimentary canal. Some place it in the superior parts of the air-vessels; others in their more minute ramifications. Some place it in the pharynx, others in the stomach, and others in the intestines. The nature of the affection is no less a subject of dispute. One set making it consist in spasm, another in laxity, and a third in inflammation. Some assert that the flu-

* Zoonomia, vol. iii. p. 378.

ids, others that the solids alone are affected, and some that the disease equally affects both.

In place of attempting to reconcile or refute these jarring opinions, I shall simply state the facts on which they rest; the facts which have come under my own observation; and afterwards draw such conclusions from them as they may seem to warrant.

It has been said that there is something in the nature of the infection, which gives the peculiar form and character to the disease. In other words, that a habit is formed, and when once formed, that it may continue even after the cause has ceased. In so far as this remark applies to the nature of the cough, I believe it to be groundless. The cough is exactly what may be produced by any very violent irritation applied to the same parts. Of this I had a very striking proof some time ago.

Two children had differed about their play. The one who supposed himself ill used, to be revenged on the other, took a handful of saw-dust, and endeavoured to thrust it into his mouth. He succeeded in his attempt. The other one crying and struggling for relief, allowed a quantity of the dust to be drawn into the wind-pipe. This

gave him great uneasiness, and after a short time, excited violent convulsive fits of coughing, which exactly resembled those of the Chincough. Even the *hoop* was very distinctly formed. At first he spit up nothing, afterwards a thick mucus, at last the irritating cause being removed by the expectoration, the other symptoms disappeared. This was a very striking example of Chincough brought on artificially.

What violent effects may be produced by the irritation of extraneous bodies, on this very delicate membrane, is farther illustrated by the following fact, recorded by Dr Home. “Mr Balfour, Surgeon, told me, that he attended a child in a disease, which from the similarity of voice appeared to him to be Croup. The child died. When opened, a piece of shell, which the child had sucked in with its breath was lying across the trachea, about an inch below the glottis, and the membrane was inflamed, and dry. Here,” continues Dr Home, “was an artificial Croup raised, from which we may evidently perceive how the voice is altered in the natural disease *.”

* Inquiry into the Nature, Causes and Cure of Croup, p. 49.

In tracing the seat and nature of any disease, we must have recourse to the aid of dissections. The neglect of this important branch, and the trusting to external appearances alone, has led to many false theories, and what is worse, to many errors in practice. In perusing the different writers on Chincough, I have met with some general allusions to dissection; but with the exception of a very few cases, I have been able to discover nothing on his head.

Bonetus in his dissections of the organs of respiration, has oftener than once described the same appearances as I have met with in this disease; but most, if not all of them, seem to have arisen from other causes. The same may be said of the dissections of Lieutaud, and also of Morgagni. Dr Baillie has described the appearances of bronchial inflammation; but he has not mentioned this as connected with Chincough. Dr Badham, reasoning from analogy, seems to have formed a very shrewd and correct notion with regard to the nature of this disease. Indeed the dissections I have had an opportunity of making seem fully to confirm the accuracy of his conjectures. "It seems to be in the highest degree probable," says Dr Badham,

“ that the secondary pectoral symptoms of Measles, and the dyspnœa which supervenes to Hooping cough, have usually their origin in this affection of the bronchiæ *.”

To these remarks, I shall add the description which Dr. Baillie has given of the trachea when it has suffered from inflammation. This will enable the reader to form a comparison between the account which he gives, and what is related of the cases which follow.

“ The inner membrane of the trachea,” says he, “ is not uncommonly inflamed to a greater or less degree. In this state it is crowded with minute florid vessels, which give it a general appearance of vascularity. When there is no inflammation, it appears in the dead body a white pulpy membrane, and there are rarely to be seen any red vessels ramifying in it. While the inner membrane is inflamed, the secretion from its glands is very much increased, and therefore its cavity is a good deal filled with a mucous fluid; even pus is sometimes formed, and both fluids are mixed with globules of air †.”

In many cases of Chincough which I had

* Observations on Inflammatory Affections of the Bronchiæ, p. 66.

† Morbid Anatomy of the Human Body, p. 90.

treated, the signs of pneumonic inflammation were very obvious, and required the most vigorous means to counteract them; but it was not till the case of my son occurred, that my attention was so strongly directed to the state of the organs of respiration.

The following outline of his case, is chiefly drawn from memory, and from an unfinished letter, which I was writing to a relation at the time, giving some account of it. I am sorry that the various gradations, by which the disease passed from one of the mildest, to one of the most severe forms, had not been carefully noted down at the time. But the truth is, at this period I apprehended no danger, and after danger became obvious, my attention and affections were too much occupied about his safety, to think of notes or of any thing else. Another circumstance, which I have to regret, was, that for the three first days, when the unfavourable change was taking place, I was so particularly engaged out of town, that I saw him only once a day. The following, however, are the most material facts.

CASE FIRST.

ROBERT WATT, AGED SIX YEARS.

HE was originally a very stout healthy infant. When about thirteen months old, he had a severe attack, and some fears were entertained of water in the head. From this, however, he completely recovered, and enjoyed almost uninterrupted good health till December last. He was tall of his age, but proportionally thick and well formed. The chest was remarkably capacious for a boy of his age. The skin was fair and delicate, with a slight disposition to freckles on the face. His hair was of a light yellow colour, and his temperament, though not very strongly marked, might be said to be rather sanguine than otherwise. He was naturally of a lively social disposition, quick parts, and inclined to activity.

About the middle of December, he was seized with the symptoms of a common cold, and by Christmas it appeared pretty obvious, that he had got the Chincough. By the New Year this was certain, but the symptoms were mild, and the on-

ly remedies resorted to, were an occasional purgative to clear the bowels. As soon as the kinks were formed, he vomited freely, particularly after meals. He had also occasionally some bleeding from the nose, and though he sometimes looked a little paler than usual, we discovered no remarkable abatement either in his health or spirits.

After the New Year the kinks became more severe, and were accompanied with a profuse expectoration of a very tough mucus. The appetite at this time seemed also to suffer some abatement. I was told afterwards, that he had shewn less disposition to take his breakfast than formerly. The vomiting, however, continued, and he ate some of his meals heartily. We were now disposed to take him from school, but from a fear of being left behind by his companions, he was exceedingly averse to the measure, and therefore continued to attend regularly, till Friday the 8th January.

On that day he was worse than I had seen him. The face was somewhat swollen, and had assumed a leucophlegmatic appearance. Still, however, he made no complaint, but consented to leave off going to school till he was better.

Even at this time, the determination of keeping him at home, arose more from a sense of the impropriety of his attending a public school, while under an infectious disease, than from the state of his health. On this evening he had some calomel, combined with a little tartarised antimony, which operated powerfully both as an emetic and purgative.

On Saturday he was mostly in the house, but did not appear worse than usual. His spirits were still good, and his appetite had been better than for several days past. On the evening of that day, however, I was struck with his manner of reading. Though he had only walked out of one room into another, when he began, he panted between every two or three words as if he had run a race, or had performed some great feat of bodily exercise. The pulse was also quicker than natural, but still he complained of nothing, and seemed to be in as good spirits as usual. At bed-time he took two aloetic pills, which operated next morning.

On Sunday he was somewhat relieved in the forenoon; but the breathlessness returning, as the day advanced, a pretty large blister was applied to the breast. After lying on the usual

time, it was found to be very well raised, but it gave him no relief. He passed a very restless night, drank a good deal, but his principal distress arose from his difficulty of breathing.

On Monday the dyspnœa continued as bad, or worse than ever. The pulse was now remarkably quick and hard, and his strength and flesh seemed to be rapidly on the decline. I had not seen him for twenty four hours, and was exceedingly struck with the change. A purgative and several clysters had been exhibited; but little or nothing could be obtained from his bowels. It was now determined to try the effects of bleeding. About five ounces of blood were taken from his arm. He seemed to bear the operation well, and experienced a sensible relief from it. This was done about eleven o'clock in the forenoon, and he continued easier till the evening. Through the night, however, the dyspnœa returned, the kinks were uncommonly severe, and all the other symptoms became highly aggravated.

About four o'clock on the morning of Tuesday, he was so exceedingly distressed, that bleeding was again resolved on, and from five to six ounces were taken from the jugular. The relief obtained from this operation was less ob-

vious, and more transitory, than from the former. He, however, was somewhat easier, and passed a better day than could have been expected, after such a bad night. A blister was also applied to the chest, and several attempts were made to procure an evacuation from the bowels, he was also put into the warm bath; but the return of night, shewed that all was unavailing. The distress became greater and greater. Still almost his only complaint was want of breath, now and then he mentioned his head, and wished it held during the kinks. He never once complained of pain in the chest.

On the forenoon of Wednesday, it was remarked that the pulse was still quick and hard, the breathing most laborious, and as bleeding appeared to have been the only remedy from which he experienced any relief, it was resolved to try it again. About four ounces were taken from the back of one of his hands. This for a short time seemed to give him a sensible relief.

On the suggestion of another medical friend, an emetic was given in the afternoon. But though a moderate quantity of the solution of tartar emetic was taken, it had little or no effect as a vomit. Some time after he passed a quan-

tity of brownish foetid water by stool, mixed with small shreds like rotten flesh. His thirst now became more urgent, and the disposition to vomit more frequent.

From Monday he had taken very little in the way of nourishment, and what he did take was generally rejected; now he refused every thing except drink. With a view to procure at least some temporary relief, a slight opiate, joined with some other antispasmodics, was prescribed, and taken at bed-time; but notwithstanding, he passed a most distressing night. He had some sleep at intervals, but did not appear to be at all refreshed. The dyspnœa was constant, and the kinks returned, with great violence, about once an hour.

Early on the morning of Thursday, he appeared at times to be delirious. Part of his head was shaven, and a blister applied. Sinapisms were also applied to the ankles. Soon after this, he appeared to be quite recollected, and the blister was removed. The sinapisms from their giving him considerable uneasiness, were also removed, but a very large blister was applied to the under part of the chest, and upper part of the abdomen. The blister above this was still

continuing to discharge. The one last applied was not long in taking effect, but it procured no sort of relief.

Every other attempt to relieve him having failed, it was now resolved to try the effect of wine. This was taken with considerable reluctance, and was generally rejected as soon as taken. It was continued, however, through the greater part of the day, and sometimes two or three drops of laudanum were added to each quantity. At last he shewed so much dislike to it, that it was given up entirely.

Towards evening, the extremities became cold, the face and hands assumed a livid appearance; and at the end of the kinks, which still continued regular and severe, he seemed to pass into a faintish exhausted state, and continued in a sort of stupor for the greatest part of the interval. At times he was sensible, and called out incessantly for drink. He took sometimes water, and sometimes butter milk, but both were almost immediately rejected in the same state in which they were taken. At each kink he rose, with a little assistance to his hands and knees, with his head over the bedside. He continued to do this till about seven in the

evening, when he made the usual demonstrations, by throwing down the bed-clothes off his body; but, as if he had forgotten what he was going to do, he lay still, had a sort of weaker kink than usual, and in a few minutes breathed his last without the smallest struggle.

DISSECTION.

THE body was opened by Mr Robert Limon, a pupil of mine, sixty five hours after death, and the following notes were taken at the time by my friend, Mr William Couper, Surgeon of this city.

“ The lungs appeared to fill the whole cavity of the thorax more completely than they generally do.

“ The anterior surface of the lungs appeared as if covered with whitish coloured flat tubercles, (not unlike bad confluent Small Pox,) as if some white fluid had been effused under the covering pleura. On making some incisions into the substance of the lungs, the cells were found filled with a whitish purulent looking mucus, with only a small admixture of air. The cells immedi-

ately under the investing pleura, thus filled, were the cause of the external appearance of the lungs above described. Some very small portions of the lungs appeared to have the cells less full of this mucus than the rest, the external surface of these portions having a more natural appearance.

“ The posterior surface of the lungs had a brighter appearance than the anterior, having more the look of recent inflammation.

“ The inside of the trachea from the thyroid gland downwards, to an inch below the bifurcation, had its inner surface smeared over with the same kind of mucus, as that filling the cells of the lungs. Beyond this its branches appeared completely filled with the same mucus.

“ The whole inside of the trachea, and its ramifications, was painted with red vessels, appearing to have been the seat of recent inflammation.”

At this time it was thought unnecessary to carry the investigation farther; but next day my friend, Mr Muir of Paisley, expressed a wish to ascertain the state of the stomach and bowels. In consequence of this, the abdomen was opened, and the following notes were taken by Mr Muir respecting the contents. It should be remark-

ed, that even at this late period, there were hardly any signs of putrefaction.

“ On laying aside the integuments, the intestines and stomach presented themselves in a very white or bleached like appearance. There was a long patch of inflammation on part of the small intestines, and beside it, another smaller mark of recent inflammation. A similar appearance was found on one part of the great arch of the colon, in which there was no fæces but a little thin greenish coloured fluid. The mesocolon was wholly very dark coloured, nearly approaching to gangrene. On turning up the stomach, the under and external surface, was as if painted with a brown colour like new burnt coffee in appearance, and there was little of it free from traces of this colour. It was as if laid on with long strokes of a brush half an inch broad. Some of them were, however, narrower and shorter than others. On laying open the stomach, the internal surface had numerous red streaks, the marks of recent inflammation; there was an universal crust of lymphatic exudation, and much of it was collected in the upper part, owing to the position of the viscus, when the body was examined.”

OBSERVATIONS.

IN the course of the above narrative, I have oftener than once mentioned the state of the bowels. From first to last, nothing like natural fæces could be obtained. Our entire failure in this respect was to me, a most alarming circumstance. A similar state of the alvine excretion, has been noticed as one of the most obstinate symptoms attending Croup. I believe it to be equally bad in Chincough. Can it depend on the obstructed state of the organs of respiration? In the present instance, it ought perhaps to be attributed to the diseased condition in which the stomach and bowels were found. In none of the subsequent cases, were the same marks of inflammation discovered, and in none of them were there the same difficulty in procuring stools.

In cases of Croup it might be advisable to ascertain how far the bowels are affected, as well as the parts in which the disease seems to be more immediately seated. I suspect that the writers on this subject have been too confined in

their investigations. In one of Dr Home's cases, he mentions, "the stomach seemed likewise very soft, and covered with a great quantity of mucus*." This great quantity of mucus was in all probability that very substance which is now usually denominated lymphatic, or inflammatory exudation. The patient's frequent reachings, her calling often for drink, and her white furred tongue, and her pulse a hundred and fifty two, all seem to favour this hypothesis. I hardly recollect of another instance of Croup, where the state of the stomach or bowels is mentioned.

I have met with cases, where the ordinary symptoms of Croup were exceedingly violent, but where there was little or no affection of the bowels. These cases have almost always yielded to vigorous treatment. I have met with others, where the croupy symptoms were less remarkable; but where the bowels were immoveable, or if any thing was procured, it was a merely greenish or brown coloured watery mucus mixed with skinny substances, like peelings of new potatoes. In such cases, there is generally, from an early

* Inquiry into the Nature, Cause and Cure of Croup, p. 20.

part of the complaint, a coldness of the extremities, a weak quick pulse, a leucophlegmatic appearance of the skin, and general torpor of the whole system. In these cases I must say, notwithstanding the boasted success of others, that I have often failed. I have failed even when I thought I had been called in pretty early, and where I had used with sufficient diligence, those very remedies which ought to have been successful. I may add that I have failed, even when I had the assistance of Gentlemen who had previously talked much of the extent of their experience, and the uniformity of their success.

Whether this affection of the bowels in Chin-cough, Croup, and several other diseases, always depends on an organic affection of the bowels; or whether it is merely the effect of sympathy, I shall not presume to determine; but I may venture to say, that it is a symptom always attended with great danger. It is also one over which purgatives, and the other means usually employed to procure stools, seem to have little influence. I have seen it overcome by bleeding, both general and topical, by blistering, and, when every thing else has failed, by continued mercurial frictions. I say *continued*, for in some instances,

I have had them persisted in for many hours at once, in one case, not less than ten or twelve.

It is common for patients labouring under this affection of the bowels, to have a frequent desire of going to stool, without being able to do any thing. This was not very remarkable in the present case, but it was so in some of the others.

In the account of the symptoms, I have said nothing of the urinary secretion; that, however, did not escape notice. From the Monday till the time of his death, he made water very seldom, and in exceeding small quantities. After a period of eight or ten hours, he would not have voided more than an ounce, or an ounce and a half. What he did make was of a deep brownish colour, had a highly urinous smell, and on cooling, became thick and muddy. In the second and fourth cases, the quantity voided, was also small, and of a similar quality; but the patients instead of retaining it long, had a frequent and troublesome desire to micturition.

The urinary secretion, in Croup particularly, as to quantity and quality, is often affected in a similar manner, and when it is so, I have always considered it as an unfavourable symptom. In some few cases I have found it more

abundant, and limpid like common water. This, I believe, may also be regarded as a bad sign. I saw it lately in one of the worst cases I ever met with. A change from either of these extremes to the natural state, affords a favourable prognosis.

I have noticed his thirst, particularly towards the fatal termination; but he had it more or less from the beginning. He generally took only a mouthful at a time, but he called for it often. Either too much thirst, or a total want of thirst, I have found to be equally bad symptoms. In the former case, the febrile and inflammatory symptoms are running too high; in the latter the patient is sinking into a state of torpor, which seems to be either typhus itself, or something nearly allied to it. Hoffman mentions it as a very remarkable circumstance, in some bad cases which he describes, "that the patients had no appetite even for drink." In these cases there were many other signs of low typhus.

The pulse was first counted on Sunday forenoon. At this time it was a hundred and thirty; but it did not strike me as being either very full or very hard. It afterwards varied from a hundred and thirty to a hundred and sixty.

In the last twenty four hours of his life, it became irregular. During the inspirations it was slow, or seemed to stand still; in the expirations, it gave a few beats, so exceedingly quick and small, that they could hardly be numbered. I have often met with a pulse of this kind in bad cases of Croup, rarely in any other disease; in none I think, except such as seemed to depend on bronchial inflammation. When the pulse goes and comes with the respiration, whether in Chincough or Croup, the disease may be regarded as pretty far gone. I have known few patients recover after this symptom became remarkable.

The symptom which was most striking, and which occasioned the greatest distress in this case, was the difficulty of breathing; yet he seemed to have no obstruction about the glottis. Even during the kinks, the inspirations were scarcely, if at all, attended with the ordinary *hcop*, and seemed to be performed in as short a time as usual. But on looking at the chest and abdomen, they were seen to suffer the most violent strainings. He repeatedly exclaimed that he could not get breath, and yet he lay with his mouth closely shut, till the very last. 'The nos-

trils, however, exhibited those alternate dilatations and contractions, which have been generally regarded as a dangerous symptom.

I have suspected that in some cases the difficulty of breathing arises from obstruction at the glottis, in others from obstruction in the bronchiæ, and I imagine that the present case, was an instance of the latter description; but of this distinction, which I conceive to be one of some importance, I shall speak more particularly hereafter.

The general heat of the body was seldom much above natural. He sometimes perspired a little about the head and neck, the rest of the skin was dry, and the extremities generally colder than natural.

It was remarked, that the feet and hands felt uncommonly heavy. That when they were let go by accident, they dropped down like a piece of lead. This arose not from any increase in the weight, but from an almost total deprivation of muscular energy. His strength was taken from him at once. On Saturday he was running about as usual. After that night, I believe he scarcely ever supported himself on his own limbs. Except in some very bad cases of fever, I have

never seen such sudden, and such complete prostration of strength from causes apparently so inadequate. This circumstance was equally if not still more remarkable in his sister's case, and in that of a little girl, who died with all the symptoms of well formed typhus. Neither of them seemed to have almost any complaint, and yet in a day or two, their strength was so completely gone, that they could hardly even sit erect.

I have mentioned, that he was three times bled. When the first quantity was taken, I was struck with the dark colour of the blood. It was uncommonly so for a boy of his age. On cooling, its appearance, was no less remarkable. After standing for twenty four hours, there was no separation into crassamentum and serum. The whole was a soft, tender, gelatinous mass. The greater part was red; but interspersed with large distinct portions of a bluish semitransparent substance like starch. I was particularly struck with this appearance, for I had hardly ever seen any thing like it before, but once, and that was in a young lad in typhus fever. Not long after being seized with the fever, his breathing became difficult, with considerable uneasiness, and weight across the chest. In consequence of

this the blood was taken, which gave him relief from these symptoms, the fever continued for some time after, but he ultimately recovered, and on the whole, got easier over than the rest of the family, who had also the same fever. The blood when cold, had so exactly the appearance I have described, that the sight of the one, instantly brought the other to my recollection, though it had occurred at a distance of eight or nine years before. Reflecting on this resemblance, after seeing the state of the bronchiæ, I was led to think, that probably many of the symptoms of typhus might arise from the same cause. Several other circumstances tending to confirm this opinion, have occurred to my mind since. In the second and third bleedings the blood had still a little of the same appearance, but it was less remarkable.

The expectoration in this case was very profuse. Even before we apprehended the least danger, I was sometimes astonished at the immense quantity of tough clear mucus which he discharged after every fit of coughing. As the disease advanced, it became more white and tenacious. After he became seriously ill, it was mixed with a gross yellow purulent like matter, and

towards the fatal conclusion, it consisted almost entirely of this. His death, from what was discovered on dissection, appeared to have been occasioned by the entire plugging up of the air cells and bronchiæ with this fluid. The connection of such a state of lungs with Chincough shall form the subject of a future investigation.

On the 24th April, I was called to see a girl of five years of age. In this instance, so far as I could learn, the previous symptoms were very much the same, as in the case I have just now related. The disease, however, was so far advanced, that I did not deem it proper to make almost any application. She died within twenty four hours. On examining the body after death, the lungs were found so nearly in the same state, as in the last case, that I have not thought it necessary to state the particulars. The most striking symptoms were the great and sudden prostration of strength, and the extreme difficulty of breathing, unaccompanied with any *hoop*, or obstruction of the glottis.

The most remarkable morbid appearances were the inflamed state of the trachea and bronchiæ, particularly the last, and the almost entire plugging up of these vessels with a serous fluid, interspersed with flakes of a simipurulent mucus. There was also found in the pericardium a greater quantity of fluid than is usually met with. The abdominal viscera appeared sound.

CASE SECOND.

JANET WATT, AGED FOUR AND A HALF YEARS.

Though my opportunities of marking the progress of the disease in this case were more numerous than in the last, yet still I have to regret, that few notes were taken at the time. I shall be able, however, partly from notes, and partly from recollection, to state the most material circumstances.

This little patient had the misfortune to be born in the seventh month, and was, without ex-

ception, the least infant I have ever seen survive. But though little, and consequently weak, yet she sucked from the first, and seemed to enjoy uniform good health. She got her teeth easily, walked alone when about two years old, and from that time, became fat, and remarkably stout. I hardly recollect of her having any complaint worth mentioning. As to her complexion and temperament, they bore a pretty strong resemblance to those of her brother, but she was considerably more disposed to plumpness.

She had been on the west coast all the month of October last, and when she returned in the beginning of November, she had the appearance of high health and spirits. She continued in this state till towards the end of December, when she began to cough, and shewed the other symptoms of a common cold. In the first week of January, the kinks were so distinctly formed as to leave no uncertainty as to the nature of the disease. She seemed, however, to enjoy her ordinary health, and took her victuals as usual. At this time she had several doses of calomel, with a little tartar emetic, which generally had the effect of both vomiting and purging.

In the second week of January, she was observed to sleep a great deal, to be more dull and languid than usual, and more easily fretted; but still she made no particular complaint. At this time our attention was so wholly occupied with her brother, that her little ailments were hardly noticed. A blister, however, had been applied to her breast, and on the twelfth she had an emetic, which operated tolerably well. Next day she was somewhat better. The kinks, however, were now very distressing. They returned about once an hour, and each of them generally consisted of two, three or four different attacks, separated by very short intervals. The expirations were less rapid and violent than those of her brother; but the inspirations were long, crowing, and peculiarly characteristic of the disease. I have never seen an instance, where the kinks, and particularly the *hoop*, were more distinctly formed.

On the 14th, the day of her brother's death, she lay in bed all day, and scarcely spoke a word. I thought she had something peculiar in her looks; but I attributed it to the concern and astonishment, which she felt on seeing the whole family in such a state of confusion and distress.

Her breathing was a little quicker than natural; but not very laborious. One thing, however, struck me very much; she used to have a very good pulse, but that day, though I made the attempt many times, I never could count twenty beats in succession. So far as it could be ascertained, the pulse appeared to be about a hundred and thirty, or from that to a hundred and forty in a minute.

She passed a very bad night, and next day she appeared to be still worse. After a consultation with some of my medical friends, an emetic was ordered; but she became so ill through the day, that it was not exhibited. In the evening another blister was applied to the breast, and the body was rubbed with some laudanum; but at this time she was so exceedingly low, that I had no hopes of her even seeing the morning. The kinks were violent in the extreme. When over, she seemed sensible for a few minutes, occasionally asked a drink, and then fell into a state of stupor, with her eyes turned up, and the eye-lids half shut. The pulse was so weak as hardly to be felt, the extremities cold, and the face partly of a pale, and partly of a livid colour. She continued in this state till roused by another kink, which

was generally after an interval of from half an hour to an hour.

On the 16th she appeared to be much better in the morning, than could be expected. The emetic was again prepared and exhibited. It operated, but not very freely. Sometime afterwards she had a pretty free stool, and in the afternoon was no worse. By evening, however, an exacerbation came on, and she passed a night in most respects similar to the last.

On the 17th she seemed to be much worse. Her tongue, which had been white and loaded from the first, had now assumed an orange or brownish colour. Her lips and nostrils were very dry, and the whole face had still more of the leaden appearance. Her strength was so completely gone, that she could hardly move a limb from one part of the bed to another. Both the superior and lower extremities were cold, of a livid colour, and shewed an obvious tendency to œdema. The breathing was more difficult, and the kinks still more severe, each kink consisting of three, four or five different attacks. The hoopings or inspirations were also particularly long and distressing.

At this time she had a frequent, I may almost

say an incessant, desire to go to stool or urine. Often requiring to be lifted six or eight times in an hour, and without doing almost any thing. The urine was particularly scanty, high-coloured, and became turbid on cooling. The stools, when they did occur, were small in quantity, but of an ordinary appearance. This was almost the only good sign she had.

She continued in this state for ten or twelve days; upon the whole making it worse, but sometimes so much lightened, as to create a glimmering of hope. She was generally somewhat better in the forenoon, and worse towards night. Some mild purgatives were given with a view to relieve the bowels. The frictions were occasionally continued, and two other blisters were applied to the breast; but nothing seemed to give her any permanent relief. She refused all sorts of nourishment, except what was absolutely forced upon her, which she took with the same reluctance as she would have taken a medicine. Though her tongue and mouth were dry, she seemed to have but little thirst. She asked now and then for a drink of water, but she was satisfied with a single mouthful. Several attempts were made to give her different kinds

of wine, but she seemed to have an equal dislike to all of them. She slept a good deal, but moaned heavily, and seemed to be much distressed. When roused up, her recollection and other mental powers, seemed to be pretty entire. I was often struck with the emaciated state of her body, particularly as there had been no waste by any of the excretions.

On the evening of Friday the 29th, she was much worse than she had been at any former period. She was now so exceedingly exhausted, that in every kink she had the appearance as if she would have expired in a faint. At this time, I was much afraid that convulsions would have closed the scene.

On Saturday she lightened for a short time, and even then, hopes were entertained; but in the afternoon, she became much worse, passed another very bad night, became weaker and weaker in the morning, and died at eleven o'clock forenoon. The kinks continued till the very last; but for a day or two she spit up almost nothing. As I have before mentioned, she had a very great tendency to sleep, throughout the whole course of the disease; but when roused, she was always sensible and quite recollected. This

symptom seems very generally to attend severe bronchial inflammations, and has often led to a suspicion of the head's being affected. In the present instance it appeared to be merely symptomatic.

DISSECTION.

On the 1st of February, twenty five hours after death, her body was opened by Mr Limon, and the following notes were taken by my friend, Dr Graham of this city.

“ The skin is generally of a livid colour, and very dark in some places, an appearance which it had a tendency to assume some time before death. There were no signs of putrefaction.—On opening the chest, the lungs were found of a purple colour, irregularly interspersed with whitish spots slightly elevated, which were found to be owing to a mixture of mucus and air under the pleura. There were no adhesions between the pleuræ, but the lungs had not collapsed nearly so much as usual. On the convex surface of the right lung a very small quantity of tough purulent looking matter was observed, which seemed to have escaped by one or two small o-

penings in the pleura, whether the consequence of rupture or erosion could not be determined. Similar matter was found interspersed through the substance of the lungs, but there was nowhere any cyst containing it. The lungs felt knotty, and uncommonly firm in some places; but on cutting into them no tubercles, such as are met with in phthisis, could be detected. In some places though their bulk was increased, they were firm, and sunk in water; in others they sunk from being collapsed, though not indurated.—The pleura costalis seemed rather more vascular than common. The trachea was slightly inflamed on its internal surface, and covered with a quantity of frothy mucus, intermixed with small portions of a purulent like matter, which increased in quantity downwards, till it nearly plugged up the smaller ramifications.—Before opening the pericardium, it seemed to contain a larger quantity of fluid than is usually observed, but it having been accidentally punctured, any fluid it might have contained escaped, without being noticed.

“ The abdominal viscera seemed sound. The gall bladder was full of dark coloured, thick, viscid bile.” The head was not examined, but

from the nature of the symptoms, there was little reason to expect disease in that quarter.

OBSERVATIONS.

AT Robert's death, I was very much at a loss to form even a conjecture, with regard to the real nature of the disease. The difficulty of breathing, which had not yielded to emetics, blisters, purgatives, &c. urged the necessity of bleeding. This was tried, but its good effects were not very conspicuous, and what relief it seemed to afford, was but of short duration.

Though I was rather a sceptic with regard to spasmodic diseases, I began to think, that perhaps the case had been mistaken; that probably there was no organic affection; in a word, that the disease was principally, if not wholly spasmodic. I began to reflect on the symptoms, and if ever symptoms characterised a spasmodic disease, it was in this very instance. The convulsive motion of the diaphragm, with those of the muscles of the chest and abdomen, were such as I had seldom or never witnessed before. I began to reflect too, that there had been no

pain, that there had been little increased heat, and that the pulse though quick, had been neither full nor strong.

In this painful dilemma, I could not settle my doubts by a reference to former experience or observation. I had indeed seen good effects from bleeding in similar cases, but still they might not be the same. I had never seen a dissection of one who had died of Chincough, and I could not recollect of one; nor could I even after fresh researches find any thing on record, but general allusions, stating that dissection shewed this, or dissection shewed that, in short that it shewed any thing, that might be necessary to support the author's theory. But when, or where, or by whom these dissections were made, I could not learn *.

This state of uncertainty led to the determination to have the body inspected, and the result shewed very decisively the nature of the disease. I was the more anxious to have this accomplished, for besides several other children, I had still three of my own under it, and one of

* At this time I had not seen, or did not recollect the cases of Chincough, published by Dr. Lettsom; in three of which the morbid appearances are described. These cases are given afterwards. See Cases V. &c

them seemingly very far advanced. But after all this was ascertained, I had still doubts with regard to the similarity of the two cases. The kinks, the state of the pulse, the difficulty of breathing, the action of the bowels, and many other circumstances, appeared to be widely different. And above all, I had strong apprehensions, that whether the same or not, it was now too late for any remedy to be of service.—This case terminating as fatally as the former, afforded an opportunity of comparing the appearances in the two, and has enabled me to form at least some probable conjectures, respecting the connection between certain phenomena, and certain organic affections.

With regard to the breathing in this disease, and also in Croup, I have noticed two very distinct states. In one set of patients, the difficulty seems to be at the top of the wind pipe, hence the stridulous sound in the one case, and the hoop in the other; but in these cases the diaphragm, and the muscles of the abdomen and thorax, are not in any very violent action. In the other set of patients, the diaphragm and the muscles concerned in the process of respiration, act most convulsively, but the patient has not

the sense or the appearance of constriction about the throat. In the one case, the cells of the lungs seem to be incapable of taking in a sufficient quantity of air, or the air when it is taken in, does not seem to serve the purposes of respiration: In the other, the capacity of the lungs is entire, a vacuum can be speedily produced, but, from some constriction or difficulty in the passage, the air enters slowly, and with a wheezing, crowing, or stridulous noise. In the first case, it may be said, that the patient is threatened with symptoms of suffocation; in the last, with symptoms of strangulation.

Of these two opposite, or at least very different conditions of breathing, the two cases just given are very good examples. In the first, the action of the diaphragm was excessive; in the last, the difficulty seemed to be chiefly in the wind pipe. In the former, I suspect that the inflammation began in the air cells, and extended upwards, affecting the trachea last; in the latter, it probably began at the same time in both, or perhaps began first in the upper parts, and extended downwards.

While this hypothesis explains the symptoms, it at the same time derives support from the ap-

pearances on dissection. In the first case, the inflammation of the air cells and bronchiæ seemed to have been of considerable standing; the purulent like excretion had become so abundant, as to have literally filled up their whole capacity, while the inflammation on the inside of the trachea, was only in an incipient state, and not covered with the inflammatory mucus. In the second case, the air cells and bronchiæ was less filled, but the inflammation on the inner surface of the trachea was more advanced, the whole being covered with a thick coating of semipurulent mucus. In the latter case, the lungs could easily receive air into their cells, but the difficulty arose in transmitting it through the trachea; in the former case, the passage through the wind pipe was perfectly patent, but the bronchiæ and air cells were occupied by another substance.

It has been remarked by some of the writers on Croup, that in various cases, the disease proves fatal without having any thing of the croupy voice, and yet the adventitious membrane is found in a more or less perfect state. In others, where the croupy voice was completely formed, it has gone off for some time before death, and yet the membrane was found entire.

The present hypothesis explains both of these anomalies.

In the first instance, the air cells and bronchiæ were probably affected as soon or sooner than the trachea, hence the difficulty of producing a vacuum increased with the difficulty of admitting air, and thus the one being always in proportion to the other, the patient might appear in danger of suffocation, but the symptoms of strangulation never could be the consequence. In the last instance, we have only to suppose the inflammation began at the top of the wind pipe, and gradually extended downwards. At the commencement of such a case, signs of strangulation would appear; because the cells could take in more air, in a given time, than the glottis could admit, hence the stridulous croupy sound in inspiration. But by and by, as the disease extended downwards, and the accumulation of mucus took place, the difficulty of producing a vacuum came to equal or exceed the difficulty of admitting air, and then the croupy stridulous noise ceased, as the noise ceases, on admitting air into the vacuum of an air pump, when the equilibrium is nearly restored.

And it may be farther remarked, that when

the patient loses the power of taking in air suddenly, from the state of the bronchiæ and air cells, he also loses the power of expelling it suddenly, and consequently the croupy voice cannot be produced by either process, even although the upper part of the trachea should be very much affected.

I had an opportunity very lately of noticing this transition from a state of Croup, to a state of excessive dyspnœa, in which the patient had nothing of the stridulous sound in her voice, for more than a day before her death; but the convulsive action in the region of the diaphragm became more and more violent.

When the patient loses the croupy voice, he generally at the same time loses the power of coughing, and also the power of speaking in an audible tone of voice. Both of which, though they may give a glimmering of hope to the inexperienced, are very bad symptoms. The same thing may be said of them, when they attend the *Peripnuemonia notha*, which is a disease in many respects very similar to Chincough and Croup. The same parts are affected, and I believe affected in a very similar manner. In all

cases the return of the power of coughing, and the return of the voice are good signs.

In dissections which have been made in Croup, it is always mentioned, that besides the adventitious membrane at the top of the windpipe, there was found a great quantity of semipurulent fluid in the under part of the trachea, or in its more minute ramifications. Now, I presume that the accumulation of this fluid is *oftener* the immediate cause of death, than the membrane itself; and and that it is *always* so, when the symptoms of strangulation and crowing disappear before the fatal event. I have never seen an instance where the membrane was so thick as to have prevented respiration entirely, although I believe such cases may have occurred.

In both of the two cases I have related, it is mentioned, that the surface of the lungs were irregularly covered with whitish spots slightly elevated. On speaking of this circumstance to my late worthy and much respected friend, Mr. Allan Burns, he mentioned, that it was not a very uncommon appearance, he had met with it often. "It seemed," he remarked, "to be always connected with an inflamed state of the lungs themselves, or of the passages lead-

ing to them. It was commonly, if not always, to be found in subjects who had died of Croup." I met with the same appearances in a very remarkable degree in a man of forty seven years of age, who had died of an inflammatory fever accompanied with well marked symptoms of spurious Peripneumony. In this instance, the air cells and the bronchiæ were plugged up with a similar matter, and nearly to the same extent as in the preceding cases.

I had an opportunity of taking the short sketch I have given of the following case, through the kindness of my friend, Mr Russell, Surgeon in this city. The account of the symptoms and progress of the disease, was partly received from him, and partly from the relations of the child. The account of the morbid appearances was drawn up at the time the body was inspected.

CASE THIRD.

MARGARET BEATON, AGED THREE YEARS AND
THREE MONTHS.



Glasgow, 10th February, 1813.

A little more than two weeks ago, her face was observed to be swelled, her eyes red and muddy, she was hoarse, and had a hard dry cough, as if she had recently caught cold. Soon after this, she complained of pain in her head and belly, for which some purgative powders were given. Afterwards she passed a large lumbricus. The kinks were now distinctly formed, and soon became both frequent and severe. About this time, she became very breathless, was hot and feverish at one time, and too cold, particularly her extremities, at another.

She generally lay in a sort of torpid state. She refused every sort of nourishment, vomited nothing, and had no thirst. In a very severe kink, which she had three or four days before death, she discharged from two to three table spoonfuls

of blood. Whether this was done by coughing or vomiting, I could not very easily learn, but from its being rather coagulated, and of a dark colour, there can be little doubt that it came from the stomach. After this she appeared to breathe somewhat more freely, and continued to pass till death, stools, which the mother described as "brains mixed with blood." She spit little or nothing during the kinks, nor did it appear from the hard dry state of the cough, that she had any thing to expectorate.

The head continued so very painful all the time, that she could not bear the least noise. Even walking lightly across the floor gave her so much uneasiness, that she would have begged of them not to hurt her head. The mouth continued clean, and not very dry, till the last. The nostrils were dry, and she was almost incessantly picking her nose. An eruption of small red papulæ made its appearance different times, about the breast and neck, but did not continue for any length of time.

About twenty four hours before her death, she had an epileptic fit, which recurred other three times, at intervals of five or six hours. She died a few minutes after the last of these. Though

her strength was much exhausted, yet she could still sit up for a short time, till within thirty six hours of her death. The kinks continued very severe till near the last. The expirations were rapid and violent, but she had little or nothing of the hoop. Her difficulty of breathing was of that kind, which appears in the increased motions of the chest, and particularly in the region of the diaphragm, rather than in the wind-pipe. She never complained of any pain in the chest. Her urine was scanty, but to appearance it was natural, and voided at ordinary intervals. Her skin was dry, and had a pale death-like appearance. The extremities were generally cold, and of a livid colour. The lips also towards the conclusion of the disease, became very livid.

No treatment had been employed, besides the powders above mentioned, and an embrocation which had been used for rubbing the back and breast. Mr. Russel had only seen her the day before her death, when he prescribed a blister, but it was not applied.—The above account of the case, as has been already stated, was taken chiefly from the mother, and some of the neighbours, who had been in attendance.

DISSECTION.

The body was opened forty hours after death, in presence of Mr Russel, several of his pupils, and myself. The skin was more livid than usual, but there were no signs of putrefaction.

“ On opening the chest the lungs appeared to have collapsed about as much as usual. Their anterior surface was more irregular than is generally found, and thickly mottled with a whitish ash colour. These whitish patches occupied about two thirds or more of the whole surface of the lungs, and were slightly elevated above the rest. Pressure on any part of the lungs, produced or increased these whitish spots, around where the pressure was made, apparently by forcing along the air and mucus under the investing pleura. Almost the whole of the right lung had nothing of a cellular feel, but, as Mr Russel observed, it felt like a piece of spleen or liver. On cutting into the substance of the lungs, in various places, the air cells appeared to be filled with a viscid semipurulent mucus, which oozed out in great abundance. A consid-

erable margin along the lower edge of each lung, was of a bright red colour, felt solid to the touch, and when cut off, sunk readily in water.

“ On laying open the upper part of the trachea, its internal surface was of a reddish flocculent appearance, but without any inflammatory exudation. This inflammatory appearance increased as we proceeded downwards, till, in the more minute ramifications of the bronchiæ, the whole surface was of a bright red colour, as if painted; but still there was little or none of that purulent like mucus, usually found on inflamed secreting membranes. As far as we could trace these passages, the ingress and egress of the air appeared to be unobstructed.

“ There were numerous adhesions between the right lung and the pleura costalis of that side; but these appeared to have been of some standing, or perhaps, had no connection with the present disease. They were more probably the effects of a pneumonic attack, which she had about a year ago, and since which she has always had more or less dyspnœa, particularly on any considerable exertion.

“ The contents of the abdomen appeared to be sound, with the exception of about a foot of

the ileum, which was very vascular, and of a red colour. Part of the mesocolon appeared also to be somewhat redder and more vascular than usual.

“ On removing the skull-cap the dura mater adhered to it very firmly; but did not shew any signs of disease. The veins over the surface of the brain were very turgid, but perhaps not more so, than we usually find them in young subjects. There was no water in the ventricles, and the other parts of the brain appeared to be perfectly sound.”

OBSERVATIONS.

IN this case we have to contemplate the disease considerably modified, both as to its symptoms and termination. How far these varieties can be accounted for, from the appearances discovered on dissection, remains to be noticed.

With regard to the symptoms, one of the most striking differences that we perceive, between this and the two former cases, is the tendency of the head to become affected. This tendency of the head to be affected, probably in-

duced the convulsions, and the convulsions no doubt hastened the fatal crisis. This additional circumstance, then, destroyed the patient, before the disease in the organs of respiration had run its natural course, and thus afforded us an opportunity of inspecting the seat, and ascertaining the nature, of the disease, at an earlier period, than could otherwise have been obtained.

Almost the only account I have been able to discover of the morbid appearances, when the patient has died in the acute stage of the disease, is contained in the following note, given by Dr Lettson. I consider it of great importance, as coinciding completely with the appearances which have occurred to myself, in the two former, and still more particularly in the present case. “My ingenious friend, Charles Combe, F. A. S. informed me,” says the Dr, “that he lately dissected a patient, who died of the Hooping cough, and found the pleura unaffected; the trachea was also very little diseased, but the ramifications of the aspera arteria were greatly inflamed; and the farther we followed these ramifications, the more considerable the inflammation appeared*.”

The most striking difference in the morbid

* Medical Memoirs of the General Dispensary in London, p. 247.

appearances in this case, from those formerly given, is the total want of that semipurulent mucus. In one of the former, it lined the whole trachea, and in both of them, almost filled up the air cells and bronchiæ. The question which occurs then, is, if the two first patients had died as early as the third, would the state of the lungs have been the same in them, as we find it in the present; and if the present had lived as long as they did, would the disease have terminated in the formation of the same sort of matter? That these things would have happened, reasoning from analogy and observation, I have no manner of doubt. When inflammation attacks a mucous membrane, it always runs a certain course, before this peculiar excretion is produced. In the present instance, the patient may be fairly supposed to have died in that stage of the disease.

This point being settled, other and still more important inquiries present themselves. How far is inflammation to be considered as an essential part of the Chincough? Are there cases of Chincough unconnected with inflammation? Is it the same inflammation to which these parts are liable at other times, or is it of a peculiar na-

ture? These are inquiries of great practical importance, but in the present state of our knowledge, they cannot perhaps be completely solved; there can, however, be no harm in the attempt.

I would ask those who maintain that Chincough is not an inflammatory disease, if they have ever seen an instance where some symptoms of bronchial inflammation did not occur? Have they ever seen it without more or less of the catarrhal symptoms in the beginning? Have they ever seen it without more or less dyspnœa, on the least bodily exertion? Have they ever seen it without more or less hardness, quickness, or irregularity of the pulse? I cannot answer for others, but I can say for myself, that after long and careful observation, I have not.

I would farther ask these gentlemen, since the trachea, bronchiæ, and air cells have been discovered in an inflamed state, in those who have died of Chincough, to what other cause is this to be ascribed? This inflammation has been found in cases where the kinks have continued most distinctly to the very last, and where no other symptoms attended, but what ought to be fairly regarded as a part of the Chincough. If the Chincough were one thing, and this fatal

bronchial inflammation another, could they both exist at the same time? I presume they could not; and I think this hypothesis is in a great measure proved, by the well known fact, that Chincough is completely superseded, by the occurrence of Small Pox, Measles, Scarlet Fever, or any other acute disease. Even the inoculation with the Cow Pox, is said to have this effect in a most decisive manner.

With regard to the last question whether the inflammation be of a peculiar nature or not, this cannot be very easily ascertained. I am rather disposed to think, from a variety of circumstances, and particularly from its occurring only once to the same individual, that it is peculiar. But the peculiarity is perhaps entirely with regard to the cause, and not the inflammation itself. Thus the erythematic affection which surrounds the vaccine pustule, is not different in its nature from erythema in general, though the cause is certainly very different. As a proof that it is the same, it can be moderated and even removed, as far as the stage of the pustule will permit, by the ordinary remedies which moderate and remove other cases of erythema.

Is it not possible then, that there may be some

eruptive disease of this membrane of the air cells and bronchiæ, so minute indeed as to escape ordinary observation, but so considerable as to excite that inflammation which is apparently the principal part of the disease?

This hypothesis seems to receive support from a variety of circumstances, and particularly from this, that the disease almost always runs a sort of definite course. We may moderate its symptoms, but we can seldom or never cut them short. Even in those cases where a cure has been supposed to be performed at once, the patient has no doubt ceased to kink, but still he has had more or less of some pectoral complaint for several weeks. In the same manner, by treatment external and internal, we may render the Small Pox exceedingly mild, or they may happen to be so, without any treatment whatever. The appearance of a few pustules here and there upon the skin, may do little injury to its functions, and may give the patient no uneasiness; but still these pustules run a definite course, and never fail at least to have some of the symptoms of Small Pox. The same thing may be said of Measles and of Scarlet Fever; and in all probability, the obstinacy of some of the symp-

toms of Chincough, may depend on a similar cause.

If this hypothesis be true, it clearly explains why the inflammation, which always accompanies this disease of the bronchiæ and air cells, may be mitigated or nearly subdued, but that it cannot be thoroughly removed till the eruption on which it depends, has run its course. The eruption may be naturally mild, or it may be rendered so by treatment, but it will always be accompanied with so many symptoms, as at least to shew its presence.

There is another consideration, to which I have already alluded, and which seems to give considerable support to the idea that Chincough is one of the Exanthemata, namely, its occurring only once in the same individual. It would perhaps be going too far to say that this is peculiar to the Small Pox, Measles, Scarlet Fever, and a few others; but it may be said with great truth, that it is infinitely more remarkable in them than in any other disease, except the Chincough.

One thing further may be urged in favour of this hypothesis, namely, the benefit which the patients generally experience from change of air,

and from being almost continually without doors. This may have the effect of moderating the eruption, in the same manner as the free exposure of the body to the atmosphere, renders the eruption of the Small Pox more mild than it would otherwise be.

But laying little or no stress on this hypothesis, it appears to me obvious, that whenever the Chincough is attended with symptoms which require treatment, such as breathlessness, violent kinks, or fever, these are always to be attributed to the progress of inflammation. Whether that inflammation be primary or symptomatic, may be of consequence in a theoretical, but not so much in a practical point of view, since the same remedies are employed, and successfully employed, in both cases.

How Chincough should so frequently terminate in convulsions, is a very important part of our inquiry; but it is one on which I am afraid we have little to advance. It has been remarked, and I think with great probability, that whatever tends to obstruct the circulation of the blood through the lungs, must increase the determination to the head. Hence we have the livid colour of the face, and other signs of turgescence

in that quarter. I believe, however, that it is chiefly in habits, where there is a natural tendency or predisposition to affections of the head, that the disease terminates in this way. From the present case, we also learn that it may terminate fatally in this way, and yet leave no trace to be discovered on dissection.

To an observer, before death, the cause of that event must have been abundantly evident, namely, the convulsions. But the part of the body which had suffered most, could hardly have been discovered by dissection. The brain, in so far as we could trace its different parts, was perfectly sound. In the former cases, the immediate cause of death was less obvious at the time it happened, but became abundantly so on inspecting the body. The most violent diseases, often leave such faint traces behind them, that we can hardly even form a conjecture with regard to their nature. In the present instance, however, the highly inflamed state of the bronchiæ must have struck the most superficial observer; but still he would hardly have considered it as sufficient to account for death. In these cases, where the patients are cut off at the first formation of the kinks, or before they are formed at all,

the immediate cause of death must be still less obvious.

In the former cases we naturally attributed the dyspnœa to the loaded state of the lungs. In this case we must find some other cause. The very firm adhesions on the right side were probably one; but I am apt to think, that an inflamed state of the membrane itself, independent of the accumulation of matter, may produce breathlessness. If that membrane, which seems to be the chief organ in the process of purifying the blood, be greatly or wholly occupied in the removal of some offending cause, we cannot suppose that it is capable of doing two actions at the same time. Its very texture may be so altered as to render it impervious to the air, or to the excrementitious part of the blood, and perhaps in either case the purposes of respiration cannot be served. Dr Priestley found that a recent bladder was perfectly impervious to the air when dry, but not so when moistened. May there not be something analogous to this in the functions of this important membrane? It may be too dry at one time, as well as too moist and loaded at another, and dyspnœa may be the consequence of either.

The following case occurred to me, after the greater part of this work was ready for the press. It does not seem to lead to any new views of the nature of the disease, but as it tends to confirm the connection, which I have supposed to exist between certain symptoms, and certain morbid appearances, it is valuable on that account. As it seems to bear a considerable resemblance to that of Beaton. I have thought proper to insert it in this place.

On the 27th May I heard of the sudden death of John Hill, a child of two years of age by Chincough, and after some difficulty, obtained permission to examine his body. This child, naturally very stout and healthy, had been under the disease only about ten days. He had caught the infection from two of his sisters, who had been under it for six or seven weeks.

At first he had merely the symptoms of a common cold. Afterwards the kinks became distinct and pretty severe, but as his sisters had been easy, no danger was apprehended. The people were poor, and had not thought of call-

ing any medical assistance. On the 25th and 26th his face was observed to be rather swollen, and of a pale colour, but the lips were livid. He complained very much of his head, shewed little disposition to stir, and refused every kind of nourishment. They remarked too, that his breathing had become very difficult, but the difficulty was not at the glottis, but in the region of the diaphragm. He had no hoop, and spit up little or nothing. Hardly any discharge could be obtained from his bowels, although several purgatives were given. His urine was scanty and high coloured.

About eleven o'clock on the evening of the 26th, he was seized with an epileptic fit, which lasted for nearly a quarter of an hour. After this he appeared dull and stupid, and seemed to pay no attention to any thing about him. He was seized with another between one and two, which lasted longer than the first, and from which the recovery was still less perfect. At three he was seized with a third, in the conclusion of which he expired.

Thirty six hours after death, the body was opened by Mr Craig, a pupil of mine. The lungs collapsed considerably, but perhaps not

quite so much as usual. Their surface shewed the same speckled appearance as has been described in the former cases, but no signs of inflammation could be discovered either in their substance or in the investing pleura. The substance of the lungs, when grasped between the finger and thumb, felt more dense and irregular than usual, and some parts of them when cut off, sunk in water.

On laying open the larynx and trachea, the internal membrane appeared to be considerably inflamed and almost dry. In the larger branches, and in the more minute ramifications, the inflammation increased, but still there was no exudation: in the air cells, some tough ropy mucus could be pressed out. The heart and pericardium were sound, as also the abdominal viscera.

On opening the head, we could discover no signs of inflammation or rupture of vessels, but the veins on the surface of the brain appeared to be remarkably distended with a very dark coloured blood. The quantity of dark coloured blood in the vessels of the thorax and abdomen, was also remarkable.

CASE FOURTH.

MISS J. K. AGED FOUR AND A HALF YEARS.



THIS patient was remarkably stout of her age, and had always enjoyed exceeding good health. The only complaint she had ever been subject to was a sort of *Tinia Capitis*, of the dry scaly kind. This had troubled her more or less from her infancy. On one or two occasions it had been so severe, as to cause a considerable quantity of hairs to come out by the roots. In October and November last, she had undergone a regular course of purgatives, which appeared to have very nearly carried it off. In the end of the last of these months she appeared to be in the very best health, but early in December, she was seized with the ordinary symptoms of catarrh, and what chiefly attracted notice, was the hardness and severity of the cough. Her brother having the Chincough at the time, it was apprehended to be the commencement of that dis-

ease, and a very short period confirmed their suspicions. By the middle of the month the kinks were fully formed. At this time several emetics were given, and some of them with considerable relief. But still the kinks recurred, and she had a good deal of fever. She was rubbed for some time with some emprical embrocation, but from this she appeared to have derived no benefit.

I saw her first on the evening of the 20th December. At this time she, and a younger sister, were both very ill. Her skin was hot and dry, and her pulse fully one hundred and thirty beats in a minute. Her tongue was also foul, and she complained of considerable thirst. The breathing was somewhat difficult, but not remarkably so. The kinks were exceedingly violent, of the bursting kind, but not accompanied with hooping.

At this time an emetic and some other purgatives were ordered. From a casual conversation which took place on the subject, she was submitted that night to the fumes of heated tar*. This operation was repeated four different times, but without seeming to do either good or harm.

* Of the manner in which the fumes were applied, see the account given in the next division of this work.

After this, several emetics and a considerable number of purgatives were given, from all of which she seemed to experience very considerable relief, particularly the emetics.

Whether she had caught any fresh cold about the end of December is uncertain, but at this time her breathing, which had never been easy, became more difficult, the cough became still more distressing, and she complained occasionally of a pain in the chest. All this time her appetite continued tolerable, she drank moderately, and her bowels, without much assistance, kept regular. On the first of January I found her so feverish, and her breathing so much affected, that I determined to take some blood from her arm. I had thought of this repeatedly before, but the quick state of her pulse, and the advanced stage of the disease, had deterred me. Four ounces were taken from her, but it gave her only a very trifling relief from her sufferings. The symptoms returning through the night, with greater violence than ever, she was bled again next day to the same amount, but with more decided and more permanent relief.

For some time after this, the chief complaint she had was the violence of the cough. The

kinks returned at short intervals, and the expirations were the most violent and rapid I have ever seen. During their continuance the face was of a fiery red colour, and the eyes staring, as if they would start from their sockets. At this time a blister was applied to the breast, but without any very decided advantage. The pulse became still quicker, the expectoration, which had been very deficient at first, became more abundant; in a little time it became mixed with purulent matter, the symptoms of hectic came on, and she began to fall off rapidly in her flesh and strength. Still, however, I must remark, that comparing her with others I was attending at the same time, the debility was not by any means in proportion to the violence of the symptoms. The cough still returned in fits, but it began more to resemble the cough which accompanies pulmonary Consumption, than Chincough. As the disease advanced, the quantity expectorated became very great, and almost the whole of it consisted of thick purulent matter.

She continued with little variation till about the middle of February, taking her food regularly, and having pretty natural discharges from her bowels. Her urine, however, was scanty, high

coloured, had a pungent smell, and became turbid on cooling. Like some of my other patients, she had also a very frequent and urgent desire to micturition, requiring to be lifted several times in an hour, and often doing nothing when she was lifted. About this time her feet and hands began to swell, and the abdomen became more tumid than usual. Another thing very remarkable in this case, was a sort of general nervous irritation. Her head, for instance, was in perpetual motion; and very different from her former disposition, she became fractious, impatient, and irritable. To relieve these symptoms, to procure sleep, and to abate the cough, it became necessary to have recourse to anodynes. But it was remarked, that after the use of these, though she was relieved in many respects; yet the expectoration was obstructed for a time, and she seemed to be much more oppressed about the chest.

The skin over the whole body was dry and unperspirable, but that of the head had become smooth and soft, not a scab or scale was to be seen. It was remarked by the attendants, that it had never been so well since she was an infant at the breast.

Reflecting on the sudden and remarkable prostration of strength, in some of the cases, I was more than astonished to find, that in this instance she was able to sit up, and even to stand on her own legs, till within a few days of her death. When the peculiar nervous state, I have alluded to, was absent, she would have sit up, and attempted to sew and amuse herself with her play-things as usual.

It would serve no purpose to detail the various reports, and the different remedies. For many weeks I had entertained no hopes of recovery, hence most of the prescriptions had no other object, but to relieve urgent symptoms. They were chiefly such as we employ in the more advanced stages of pulmonary Consumption. A few days before her death, at the suggestion of some of their neighbours, they applied a blister to her breast. This afforded no relief, and soon became of a dark livid colour approaching to gangrene.

She died on the 21st February, after a most severe and tedious illness. The cough continued to distress her to the last, but it had long ceased to have much resemblance to the Chincough. The pulse became quicker and quicker,

often exceeding a hundred and fifty in a minute, and towards the end, it was frequently irregular. The breathing was apparently less difficult, than it was in former periods of the disease. For the last two days she lay chiefly on her left side, during this time the leg and arm on that side became œdematous, and swelled to a considerable size.

DISSECTION.

THE body was opened twenty five hours after death by Mr Limon, in presence of Mr Russel and myself, and the following notes were taken.

“ The body appears very much emaciated. The skin is darker than usual, and stained here and there with livid spots. Left arm and leg œdematous. A place on the breast and neck, where a blister had been recently applied, of a dark livid colour. No signs of putrefaction in other respects.

“ On opening the thorax, the lower part of the right lung was found to adhere firmly and extensively to the pleura costalis of that side. This portion of the lung seemed to be enlarged,

and occupied fully that portion of the chest. It was of a whitish colour, had lost all appearance of cellular structure, and on being pressed with the finger, it felt hard and gristly in some parts and soft and pulpy in others.

“ On removing the adhesions, a large abscess was discovered, ramifying through this part of the lung in all directions, and partly filled with purulent matter. The immediate parieties of the abscess were of a dense cheesy consistence, and varied from a quarter of an inch to an inch in thickness. Beyond this solid portion, the whole substance of the right lung was interspersed with tubercles, exactly similar to those met with in ordinary cases of pulmonary Consumption. Many of these tubercles were smaller than peas, and some of them as large as hazel nuts. Some of them were slightly, others more extensively inflamed, and many of them were in a state of suppuration.

“ The whole surface of this lung was covered with a layer of inflammatory exudation, and in many places the investing pleura appeared to be very much eroded and destroyed.

“ The left lung was much more collapsed than the right, and exhibited those irregularities on

its surface, and the same mottled appearances described in former cases. On examining its substance between the finger and thumb, it was found to have the same tubercular feel as the right, and much more solid than natural.

“ Some parts had a peculiar reddish purple colour, and felt more uniform in their texture than the rest. The colour of these portions seemed to depend on the quantity of blood contained in them. When cut off, they sunk readily in water.

“ On cutting into this lung the number of tubercles was nearly as great as in the right, and were as much diversified in point of size, but fewer of them had arrived at a state of suppuration. On this side there were no adhesions, and the investing pleura, did not appear to have suffered from inflammation as in the right.

“ The mediastinum appeared to have suffered in the first instance, from inflammation, and latterly, its cellular portion had become œdematous. On pulling up the sternum, part of it adhered to its inner surface, and part of it remained floating between the lungs like a quantity of jelly. The pericardium contained a much larger

quantity of fluid than usual, but the heart itself appeared to be sound.

“ The whole of the larynx and trachea were then removed out of the body and examined. The glottis and epiglottis were slightly inflamed. The internal surface of the trachea was also a little more vascular than usual, and was covered with the natural mucus. On proceeding farther down, the vascularity seemed to increase, but even on entering the bronchiæ, it hardly deserved the name of inflammation. At no place as far as it was traced, could any thing like a lymphatic coat be discovered. Here and there we could perceive some particles of purulent matter, but these had evidently arisen from the abscess in the lungs.

“ On opening the abdomen, the liver was found much enlarged, extending into the left hypochondrium, and downwards into the umbilical region. Its surface was of a whitish ash or clay colour, resembling boiled liver. The structure did not appear to be much changed, but the whole substance felt somewhat denser than usual. The gall bladder was full of a thin light coloured bile.

“ The spleen was also enlarged, and its surface

was rough and vascular, as if it had suffered from inflammation.

“ The stomach was very much contracted, being little more capacious than the rest of the intestines. The internal coats were much corrugated, but no signs of disease. It contained a small quantity of fluid like thin gruel.

“ The intestines were here and there of a dark colour, but this seemed to depend entirely on these portions having lain in a more depending posture than the rest. Owing to the want of time, the head was not examined. But we had little reason to expect any morbid appearances in that quarter.”

OBSERVATIONS.

THIS case is important in many respects, but chiefly in illustrating one of the most unfortunate terminations of the disease. I say most unfortunate, for although many of the rest were equally, and some of them more suddenly fatal, none of them was attended with half the suffering. I have seen a considerable number of fatal cases this season, but I must say this patient appeared

to suffer more than the whole of them put together. Her distress lasted for more than two months, and during that long period, she hardly experienced one day's remission.

That the lungs were sound when the Chincough commenced, I think there can be no manner of doubt. I could hardly conceive a figure, and general appearance of a patient more remote from a phthisical habit. There might, however, be some predisposition to phthisis; her mother had died of that disease. Be that as it may, it shews how readily the Chincough may rouse that predisposition into action, in those where it already exists, and how readily perhaps, even the predisposition itself may be excited in others.

In this case, judging from the morbid appearances, we have to view the disease in a new light. But the principal pathological question is, did it begin in the same manner as in the others? Did it in the first instance, consist in an inflammation of the mucous membrane of the air-cells and bronchiæ, and from that spread to the substance of the lungs? That it did, appears to be highly probable from this circumstance, that the catarrhal symptoms were the same in all of

them. The first symptom which seemed to point out the extension of the disease to the substance of the lungs, was the peculiar hardness, dryness and severity of the cough. The expirations were so rapid and violent, that the patient, to use an expression of the attendants, "looked as if she would burst." But at the same time she had no difficulty, at least in the wind pipe, in taking in a full inspiration. When the kink was off, her breathing was difficult, but it bore no comparison to the difficulty which attended the first case I have described. She breathed quick, but she had none, or very little, of that labouring in the region of the diaphragm. This, however, became greater towards the fatal crisis.

I have said that the disease probably began in the mucous membrane, and from that extended to the parts adjacent. This idea may be illustrated by various analogical facts. There is nothing more common, than for the inflammation which attacks the membrane of the mouth and fauces, to extend to the substance of the tonsils, to the glands of the neck, and sometimes even still more extensively. But I may adduce a case still more directly in point. The gonor-

rhœal inflammation seems to be peculiar to the mucous membrane, so that even when left to itself, it generally does not extend to a greater depth. But sometimes, perhaps in peculiar constitutions, it either extends itself, or it excites other inflammations in the whole substance of the penis, in the testes, and even in the glands of the groin.

The same observations hold with regard to the poison of the Egyptian Ophthalmia. Its province seems to be the adnata. In mild cases it shews no disposition to go farther, and even in the worst cases, it may be prevented from going deeper by timely and appropriate treatment.

There is another point of view in which these analogical illustrations are peculiarly striking. When the gonorrhœal inflammation extends, or is translated to the deeper seated parts, the superficial affection abates or goes off entirely, at least the running does so. The same thing seems to happen when the inflammation extends, or is transferred from the mucous membrane of the bronchiæ and air cells, to the substance of the lungs. This was very remarkable in the present case, these parts being slightly, if at all affected.

I feel pleasure in quoting the following dis-

section, as bearing a very close resemblance to the one I have just been describing, and tending to illustrate still further this termination of the disease. The patient was a child of three years, and though he had been six months under the disease, he appeared to have died before the tubercles arrived at a state of suppuration.

“ On opening the body, the lungs appeared to be entirely composed of tubercles; the left lobe adhered firmly to the pleura, but no suppuration had taken place in the lungs, nor any evident disease in the branches of the aëria arteria. The pericardium was distended with an aqueous fluid; the liver was enlarged, in which were several tubercles, the mesenteric glands were likewise indurated, but the other viscera had no particular morbid appearance*.”

Here, as in the case I have just related, the disease seems to have passed entirely from the membrane of the trachea and its ramifications, to the substance of the lungs. The liver had also suffered a similar enlargement, and there was the same accumulation of fluid in the pericardium. All these, however, are to be regarded as consequences of the secondary, rather than of the pri-

* Lettsom's Medical Memoirs of the London Dispensary, p. 293.

mary disease. I believe they are very often met with in pulmonary Consumption.

In the case of Miss J. K. it was remarked, that the spleen was enlarged. This, in all probability, should be regarded as the concomitant or consequence of the disease. Why the spleen should be so often affected in phthisical complaints, it is not easy to assign a reason, but of the fact there can be no doubt. Dr Prost relates, that of thirty eight patients who died of pulmonary Consumption, he found the spleen enlarged from two to six times its natural size in one half of them *. I have always considered this as a very important remark, but hitherto I have had few opportunities of ascertaining how far it will hold true with regard to cases as they occur in this country.

The Chincough may also terminate by inducing pneumonic inflammation, I mean simple inflammation of the substance of the lungs, and of the investing pleura. I have not met with an instance of this, where I had an opportunity of

* Médecine éclairée par l'observation et l'ouverture des corps.

examining the body after death, but the following from Dr Lettsom's Medical Memoirs, seems to be a case in point. As it comes from so respectable a quarter, and as it tends to illustrate the progress of Chincough, I shall give it entire, and in the author's own words. The Dr remarks, that it was "communicated to him by a gentleman, conversant in private, as well as hospital practice."

CASE FIFTH.

"MARGARET M'DONALD, a child about three years old, was attacked with the Hooping cough in March 1772, and she had then laboured a month under the disease. On the fourth of April she was worse, and became much emaciated, and the cough was almost insupportable, so that in each spasm, her parents thought she would have been suffocated; the pulse was weak and not so quick as might be expected, from the age and disease of the patient; but

this I attribute to the child's being worn out by fatigue; respiration was performed with difficulty the last week, but the belly was soluble and not large. As she had never been bled, three ounces were taken from her arm this day, a blister was applied to the stomach, and a draught, wherein were twenty drops of ipecacuanha wine, and ten drops of tincture of castor, was exhibited every four hours.

“ The bleeding instantly relieved her breathing, but this dawn of hope did not last long, for on the 15th, about ten in the morning, she died.

“ On examining the chest and abdominal viscera, the latter did not seem to have been inflamed; the omentum had but little fat upon it, and the spleen was longer than I think is usual in such young subjects. Upon raising the sternum, the lungs were inflamed, and the right lobe adhered firmly to the pleura in every part, and the left in a less degree, but it was smaller than the other in a considerable degree. The substance of the lungs, allowing for inflammation, appeared in every other respect sound *.”

* Lettsom's Medical Memoirs of the London Dispensary, p. 303.

OBSERVATIONS.

IN this case it would appear that the patient had died while the inflammation was in the acute stage. No mention is made of the formation of pus, nor were there any appearances of an abscess. There could not have been tubercles, for the substance of the lungs, we are told, except being inflamed, were otherwise free from disease. It is plain, however, from the extensive adhesions which had taken place, that the inflammation had proceeded to a very great extent.

A case in some respects similar to the present, was mentioned to me by my friend Mr Russell, but where the disease had actually terminated in suppuration and abscess. He had taken no notes of the case, but gave me the following particulars from memory.

The patient was a female child about eighteen months of age. The disease had continued about two months. In the first instance it was characterized by signs of pneumonic inflammation, and latterly by hectic. The lungs were found to be sound, except in one place where there was a large abscess. This abscess was of

the common kind. It had none of the hardened parieties, which seem to be so peculiarly characteristic of those abscesses which attend tubercular Consumption.

I shall add the following case, not because it seems to bear particularly on any view of the disease which I have taken, but because it is the only other case of Chincough, which I have found on record, where the morbid appearances have been given.

“ John Higginbotham, a healthy boy of seven years old, had the Hooping cough in September 1773, which continued growing worse till the sixth of October following, when he had the misfortune to break his thigh. After proper chirurgical care was taken of the limb, I found the Hooping cough very violent, which gave me the more uneasiness, as I suspected the convulsive coughing would produce pain, and displace the fractured limb, and so it proved; his cough also grew worse, respiration more difficult, and on the eleventh he died.

“ He had never been bled till I saw him, when

six ounces were taken away, his body was kept laxative by manna; he had a blister applied between his shoulders, and had oily draughts, with four grains of nitre in each, every six hours, for the first three days; after which others made of spermaceti, with half a drachm of oxymel of squills, and ten drops of tincture of castor in each, were substituted.

“ Upon opening the thorax soon after he died, the lungs were remarkably large, and appeared as if inflated with wind, there were several adhesions to the pleura, particularly on the left side near the spine. The pericardium was very full of liquor, somewhat of the colour of serum, separated from the blood of a bilious constitution; when the abdomen was opened, the intestines were inflamed, and the liver was less tinged with bile, in the neighbourhood of the gall bladder, than I ever recollect to have seen, but perhaps this might be owing to the body being inspected a few hours after death: he had a bubonocoele on the right side, but which I am certain was unconnected with the fatal disease, as the protruded interocoele was as little inflamed with blood as any other part of the intestinal tube *.”

* Lettsom's Medical Memoirs of the London Dispensary, p. 304.

After having proceeded thus far in my inquiries respecting the nature of Chincough, I obtained the following account of the appearances after death, in a child of between four and five years of age. The principal symptoms, so far as I could learn, were considerable difficulty of breathing, a very violent hard cough, but not accompanied with much *hoop*; occasional pain in the chest, and little or no expectoration.

“ Twenty four hours after death. On opening the chest, the lungs, on their surface exhibited a white mottled appearance, as if matter had been effused, but when cut into, a small quantity only oozed out, which was white and of the consistence of mucus. The lungs adhered slightly to the pleura costalis in a number of places, and appeared in their substance to have suffered from inflammation. In the centre of the right lung, a large glandular looking body was found, which felt hard and solid. The trachea, when cut into at the under edge of the thyroid gland, and traced throughout some of its principal di-

visions, exhibited no appearance of inflammation or exudation.

“ The pericardium contained a larger quantity of fluid than usual. The stomach and intestines appeared rather whiter than natural. The blood vessels on the mesentery were red and turgid. The liver appeared sound.” This patient lived at a distance. The dissection and report were made by my pupil Mr Limon.

In this case, the patient appears to have died in consequence of the disease extending to the substance of the lungs, and their investing pleural. Here, as it was remarked in the fourth case, the inflammation on spreading to the deeper seated parts, seems to have totally left those which it first occupied. The trachea and its principal ramifications were discovered to be quite sound.

DISSECTIONS OF BRONCHITIS.

IN the conclusion of the former division of this work, I subjoined an abstract of the symptoms of Bronchitis, and pointed out the analogy between that disease and Chincough. Following

up the same view of the subject, I shall now present the reader with some account of the morbid appearances, which have generally been discovered after death in the former disease, and shew the strict analogy they bear to those of the latter. I shall do this partly from Dr Badham's work, and partly from some detached cases to be met with in other publications. I conceive this to be an object of very great importance, for the nature of both diseases has been much less known and studied than its importance deserves.

The first cases I shall quote, are the following from Dr Badham. "A man of forty years of age, exceedingly muscular, and of health which knew no interruption, went out to Greenwich on Easter Monday, and heated himself by the coarse amusements which are customary on that occasion. He found himself ill on returning to town at night, went immediately to his bed, and was attacked with the symptoms of Bronchitis. He was seen on the second day; it was then not too late to bleed him, and, as far as recollection serves, this operation was repeated, but with inconsiderable relief. Every other measure, which seemed likely to be of service, was of course adopted; but he died within the week.

“ The chest was examined the day after. The bronchiæ were completely plugged up by a thick tenacious secretion; but the lungs were perfectly sound, and there were no adhesions, or other marks of disease.

“ In the early part of the last winter, a man of thirty five years, who had been troubled with an inconsiderable cough for some weeks before, was attacked with violent dyspnœa while working in the open air. The cough became incessant, and he expectorated a great quantity of thick greenish yellow sputa; but the dyspnœa in place of being relieved, became rapidly worse. On the third day after the attack he was visited, and the symptoms of extreme debility had already appeared; he was unable to breathe, except when the trunk of the body was elevated. The respiration was very frequent, and attended with a singing noise like that of water beginning to boil. His pulse resembled that of a patient in the last stage of Typhus Fever. His countenance was very pale, and his expectorations soon began to be less frequent. He lived two days longer, and was delirious some hours before he died.

“ On examination the lungs were perfectly sound, and free from adhesions. The bronchiæ

were not full, as it was expected they would be, of that secretion of which so great a quantity had been expectorated; but marks of inflammation on their surface were sufficiently distinct. The operation of an emetic, taken a few hours before his death, had probably removed the secretion which had existed to so great an extent, during the progress of his illness *. This patient, therefore, did not die of suffocation," continues the Dr, "but in consequence of extreme and suddenly induced debility.

"A child about two years old, laboured under difficulty of breathing after the Measles. The respiration was frequent and noisy, and considerable fever attended. It remained ill for above a fortnight, and latterly became emaciated. On examining the chest, the lungs were entirely sound, but the bronchiæ were completely filled with a secretion of a more fluid consistence than usual, and of a purulent appearance †."

Nothing can be more striking than the analogy between these cases, and the cases of Chincough we have formerly detailed. The points of

* A very important hint respecting the use of emetics in such cases. A similar remark is made by Mr Chevalier in one of the cases which follow.

† Observations on the Inflammatory Affections of the Mucous Membrane of the Bronchiæ, p. 56.

resemblance, indeed, are so numerous, and so apparent, that it would only be a waste of time to attempt an enumeration of them. The cases which follow were published by Mr Chevalier, and seem also to be very much to the point. He has given them under the term *Catarrhus Suffocativus*; or he thinks they might perhaps with equal propriety be styled *Coryza Trachealis*.

“ The first was that of a young man, about twenty years of age. The disease at the beginning had every appearance of an attack of mild Typhus. On the two first days there was no affection of the chest whatever. On the third day, the patient complained of a pain in his side, to which a blister was immediately applied. The symptoms of general debility were such as to forbid the use of the lancet. On the morning of the fourth day he was relieved, but in the evening great difficulty of breathing came on, he was, however, able to walk out of his room so late as nine o’clock. After this he went to bed, but in the middle of the night, he awoke complaining of a sense of suffocation; became exceedingly irritable and passionate, and died at three o’clock in the morning.

“ We examined the body about nine hours

after death, and on opening the chest, it was observed that the lungs did not collapse; we therefore expected to find them adhering to the pleura, but this was in no degree the case. The lungs were entirely free from any mark of inflammation or alteration of structure, nor was any fluid effused into either side of the thorax, or into the cavity of the pericardium. On laying bare the trachea, and making an incision into it, an immense quantity of thin mucus gushed out, with which both it and the bronchiæ were completely filled; a considerable quantity was also pressed from the air-cells of the lungs. The inner membrane of the trachea, and its branches appeared much more vascular than usual, there was no effusion of coagulable lymph, but a few flocculi of that substance were observed in a part of the mucus, which was contained in the subdivisions of the bronchiæ. The contents of the head and abdomen were sound."

The second patient was between thirty and forty, and was not seen till about ten days after the commencement of his indisposition. At that time he appeared extremely languid, had a small weak pulse, some difficulty of breathing and rigours. After the use of a blister and an eme-

tic, he went on for a week without any material alteration of his symptoms. On the eighth day his breathing became more oppressed, and he complained more of cough and pain over the whole chest. As his debility did not appear greater than it had been, six ounces of blood were taken away. In the evening he became more restless and delirious. About five next morning he awoke in a violent fit of delirium, and died apparently suffocated in about half an hour. The following is the account given of the dissection.

“ The lungs in this case did not collapse when exposed, but they were not in the least inflamed, or diseased in their structure. The trachea and its branches were completely filled with the same kind of mucus as in the former case; some was found in the air cells. The membrane lining the trachea, had also the same appearance of increased vascularity. The head was opened, but no mark of disease was discovered in it, or within the cavity of the abdomen.”

The two next cases were in children about four or five years of age. Both had slight pectoral affections for a week or ten days, which had excited no particular alarm, but were fol-

lowed at length with a degree of stupor, which gave rise to a suspicion that mischief had arisen within the head, and they were both examined after death. Both of them died convulsed. " There was no disease whatever within the head of either, but in both the trachea and its branches were filled with thin mucus, and its inner membrane was slightly inflamed. The lungs collapsed but very inconsiderably, when the thorax was laid open, and yet very little mucus was contained in the air cells.

" The fifth case was a child about two years old. On the fourth day after the eruption of the Measles, the patient became stupid, lay with its eyes half open, and took no notice of any thing. But on examining the eye, the pupil contracted properly, and the child when roused appeared perfectly sensible. The next day these symptoms continued, the countenance was bloated but florid, the breathing was short; but not that shortness which arises from inflammation, and is produced by a sense of pain on extending the chest, but seemed as if the chest did not contract properly in expiration. Its pulse was very frequent and feeble, but not at all hard. After a considerable variety of treatment, which seemed

to give a temporary relief, on the eighth it became extremely languid, and died after a short fit, apparently exhausted, on the morning of the ninth." The following were the appearances after death.

" On opening the chest the lungs did not collapse, but were free from every appearance of inflammation or adhesion. The bronchiæ were filled with mucus, and the trachea had undoubtedly been so, for its inner membrane was exceedingly red, much more so than in any of the former cases, and the mucus in the bronchiæ had the same appearance as in them, with flocculi of coagulable lymph intermixed in it *."

In the cases of Bronchitis, I have quoted, there are many particulars in which they strongly resemble Chincough.—Among the symptoms, the debility, oppression in breathing, small quick pulse resembling Typhus, affections of the head, &c. Of the morbid appearances the most remarkable are, the uncollapsed state of the lungs, the absence of any signs of inflammation, except in the trachea and its ramifications, and the immense effusion into these vessels.

* Medical and Physical Journal, vol. vii. p. 389.

To these observations I could add many others from the writings of Bonetus, Lieutaud, and Morgagni, but it would be merely to swell this part of the work to an unnecessary extent. The first of these authors, I have just now mentioned, has a variety of cases under the following heads, all of which must obviously have been instances of this inflammatory affection of the trachea and bronchiæ. “ *Dyspnœa a lenta pituita intra tracheam—Orthopnœa ab inflammata aspera arteria—Suffocatio a materia viscida bronchia obturante—Asthma ob pulmonum meatus pituita infractos, &c **.”

GENERAL CONCLUSIONS.

HAVING detailed the facts which have come under my own observation, and those found in the different authors I have consulted, and having stated the deductions and reasonings, which occurred to me at the time, I shall briefly sum up the whole, so as to give the reader a more connected view of the subject.

It seems pretty clearly proved, that Chincough

* Sepulchretum sive Anatomia Practica, ex cadaveribus morbo denotus, &c.

is in all cases an inflammatory disease, and that its chief seat is in the mucous membrane of the larynx, trachea, bronchiæ, and air cells.

When it is mild it may run its course, and cease spontaneously, without disturbing very materially the other functions of the body, or even the functions of that very membrane where it is seated.

In some cases the inflammation, in its acute stage, is so severe and extensive in the mucous membrane, as to obstruct, if not wholly prevent, the objects of respiration, and thus proves fatal as it did in the third case. Such patients generally die convulsed.

In other instances the inflammation proceeds to a more advanced stage, producing such a profuse and altered secretion of mucus, as to plug up the air cells and bronchiæ, and thus prove fatal by preventing the access of the air, as in the first and second cases.

Sometimes the inflammation, leaving the mucous membrane, extends to the deeper seated parts, and proves fatal in the form of ordinary Pneumonia, as in the two cases from Dr. Lettson's work, and in the one reported by Mr. Limon.

In other instances, the pneumonic inflammation runs on to suppuration, and abscesses are found in different parts of the substance of the lungs, as in the case mentioned to me by Mr Russell.

Sometimes the inflammation leaving the mucous membrane, and extending to the deeper seated parts, excites tubercles, and the patient dies, with all the symptoms of pulmonary Consumption, as in the fourth case.

There may be other ways in which the disease terminates, but these at least seem to be ascertained from the dissections given. On the whole I am disposed to conclude, that whenever Chincough proves either dangerous or fatal, it is by the degree of inflammation, in the natural seat of the disease, or by that inflammation extending, or being translated to other parts.

THE TREATMENT OF CHINCOUGH.

PRELIMINARY REMARKS.

IN the Treatment of Chincough, it has been a general complaint, that the practice is wholly empirical. Sometimes evacuations have been recommended, and with great success; at other times a plan of treatment entirely the reverse; but no author has attempted to explain, except by conjecture, the cause of this contrariety. Few of them indeed have examined the subject so fully as to know, whence the danger chiefly arose; the consequence has been, the indiscriminate manner in which all remedies have been prescribed.

We have seen that the disease varies most es-

entially in its nature, and terminates in a variety of ways; hence no one plan of treatment can be applicable in every case, nor even in the same case, at different periods.

In the first division I have endeavoured to point out the great variety of symptoms which are to be met with, and in the second to connect these with certain morbid phenomena, which have been discovered after death. Our object now is to remove these symptoms, and this we shall attempt partly from experience, and partly from a knowledge of the causes on which they depend.

In the treatment of Chincough, I have little or nothing new to propose. Experience has already supplied a sufficient number of remedies, all that was wanted was a little more light into the nature of the disease, to render their application more rational and decided.

I have no wish to dwell on theoretical views of the subject; but before proceeding to discuss the particulars of the treatment, it may not be improper to say a few words, respecting the indications of cure; a subject which by many has been regarded as so very obscure. This obscurity has arisen chiefly from taking too confined

a view of the symptoms of the disease, and from the very imperfect notions which have been entertained by practitioners, respecting the symptoms and nature of bronchial inflammation.

The practitioner who takes only into account the weakness of the patient, the difficulty of breathing, and the violent convulsive strainings of the muscles concerned in respiration, has no hesitation in declaring that the disease is wholly spasmodic, and that the spasm arises from debility. Hence his indications are to support the strength and remove the spasm.

This view of the subject comprehends much of the doctrine of Cullen, and the whole of the theory of Brown. But it is completely set aside, when we come to know, that in these cases the lungs are entirely plugged up, and that these violent exertions are not the result of any peculiar state of the lungs themselves, but merely the consequence of their being deprived of a due supply of air.

It may be said that the difficulty of breathing comes on before the effusion of this fluid into the lungs takes place. True it does, but it never takes place till the mucous membrane is in a state of inflammation, and when once it is inflamed,

it in all probability becomes too dense or too thick, to allow the air to have its due influence on the blood, so that the patient, even while the lungs are distended with air, is as little the better for it, as if they were distended with water; indeed we meet with the very same convulsive strainings in the one case as in the other.

While the indications of cure derived from an idea of spasm and debility precluded all evacuations, and suggested the use of tonics and antispasmodics, the state of the pulse tended still farther to confirm the truth of their doctrine. In Chincough, it has very seldom that strong throbbing feel, which indicates ordinary inflammation of the lungs. On the contrary the pulse is small, quick, weak, and often irregular; sometimes it is so from a very early period of the disease, and almost always so towards the fatal termination.

These, are no doubt, signs of great debility in the system; but from what cause does this state of the pulse proceed? I shall reply to this query in the language of Dr Badham.

“ With respect to the sudden occurrence of that extreme debility in the more acute bronchial affections, which extinguishes all hope of saving the patient, it may probably be in some

manner explained, by reflecting that these changes which are wrought upon the blood in its transmission through the lungs, by the agency of the air in respiration, must be very much impeded, when the secretion is great. The mucus forms a varnish, which tends to diminish the communication between the blood vessels and the air vessels; the blood deprived of its pabulum, no longer stimulates the heart to a just degree of action; the circulation therefore becomes languid, and the pulse sinks.

“ This view of the subject,” continues he, “ seems indeed to require that the countenance should exhibit a livid, rather than a palid appearance; the livid hue would probably be more frequently evident, were it not for the languid state of the circulation; for the blood must be, under such circumstances, less oxygenised, and therefore less florid. But if the action of the heart and arteries be at the same time very feeble, it may not be propelled to the surface in sufficient quantity, to produce a corresponding appearance in the complexion. *”

Dr Badham seems to consider the obstruction given by the mucus in the lungs, as the sole

* Observations on the Inflammatory Affections of the Bronchiæ, p. 83.

cause of preventing the arterialization of the blood. To this I think he ought to have added the inflamed state of the membrane itself; for after the patient begins to expectorate, and when there is most reason to suppose the whole surface smeared over with mucus, the breathing becomes easier, and continues so, till the secretion becomes so abundant as to fill up mostly or entirely the air cells, and passages leading to them. Dr Bree I think has fallen into a similar error, in accounting for the difficulty of breathing in the paroxysm of Asthma.

Having stated these objections to the ordinary indications of cure, and stated what I conceive to be the true nature of the disease. I shall now point out more particularly the objects the practitioner ought to have in view in treating Chin-cough.

1. The first indication is to see that all the different excretions be duly performed. A deficiency in any of them is sure to aggravate every symptom of the disease.

2. The second indication is to bring on, as easily and as speedily as possible, a moderate degree of expectoration. This seems to be the natural means of relieving the inflammatory af-

fection of the bronchiæ; but it must be done by such measures as are least calculated to heat and irritate the general system.

3. As Chincough is always of an inflammatory nature, the third indication of cure is to endeavour to prevent its becoming immoderate, and when it is already so, to endeavour by every means in our power to repress the disease, and restore the healthy action of the parts.

4. But if the inflammatory affection has run too high, and the secretion of the mucus become too profuse, our object is then to aid the expulsion of what is already formed, and endeavour to regulate the formation of more.

5. If we succeed in fulfilling these indications, our last object is to restore the patient as speedily, and as completely as possible, to his original health and strength.

I shall not in the subsequent parts of this division of the subject, tie myself strictly down to the method I have here proposed; but shall, in general, keep it in view. And I hope to be able to do this without deviating far from the ordinary plans of treatment, which experience has shewn to be most successful. But here, as in most other diseases, the practitioner must make

this allowance, that the disease will sometimes prove too powerful for any plan of treatment, however well adapted; and in other instances, the constitution is such, that it will not only overcome the disease itself, but surmount the obstacles presented by the most opposite and the most preposterous measures, which the wildest imagination could suggest. Hence the unmerited blame, and the unmerited praise, which many prescriptions have obtained.

THE USE OF EMETICS.

PATIENTS always experience relief from free spontaneous vomiting. This circumstance probably suggested the use of emetics, in the treatment of Chincough. If it did so, experience has fully confirmed their beneficial effects; hence they have been recommended, not only by Willis, but by almost every author since his time.

Astruc speaks in the highest terms of the benefit to be derived from vomiting. He trusted chiefly to ipecacuan, and seemed to think, that it acted not merely as an emetic, but as a sort of specific, in attenuating and discharging the viscid

phlegm, and in rousing and relieving the whole system. "Ipecacuan," says he, "is a specific in these cases, as well as in dysenteries, where we see by ocular demonstration, the effects of its attenuating quality, in the exclusion of the morbid matter, after which the disorder ceases *."

"Of all other remedies," says Dr Cullen, "emetics are the most useful in this disease; both in general, by interrupting the return of spasmodic affections, and in particular, by determining very powerfully to the surface of the body, and thereby taking off determinations to the lungs. For these purposes, I think full vomiting is frequently to be employed, and in the intervals necessary to be left between the times of full vomiting, nauseating doses of the antimonial emetics may be useful †."

"Nothing most certainly is more necessary for young children," says Dr Bisset, "in this disease, than gentle vomits, when they vomit not at all, or but seldom in the coughing fits. This procedure appears from what is said to be perfectly agreeable to the nature of the disease, and I have often observed its good effects. In such

* Treatise on the Diseases of Children, p. 147.

† First Lines of the Practice of Physic, § 1419.

cases I ordered a tea spoonful of the following mixture §, or so much of it as was sufficient to cause the child to vomit once or twice, to be given once a day, or as often as it seemed necessary. For children vomit easily without being much strained, or weakened in the least by the operation. Some of them vomit with every violent coughing fit, with advantage, since by that means the phlegm is wholly ejected *.”

“ For the relief of the cough,” says Mr Burns, “ nothing is so beneficial as emetics. These have been given in nauseating doses, so as to make vomiting be readily excited by the cough; but in general a full dose of ipecacuan, will be as effectual, and less distressing. At first, the emetic should be frequently repeated, especially to infants, perhaps once a-day, or once in two days, according to circumstances; and this degree of frequency is by no means injurious. Antimony has been highly praised by many, but it is more apt to weaken the stomach, and in very young children it sometimes produces violent effects †.”

§ R. Oxy mel. Scillit. Simpl. ā ʒss. Spt. Sal. Am. ʒss. M. Cap. Cochlear. Minut. vel. q. s. ad Vomitus Ciendum, pro re nata.

* Medical Essays and Observations, p. 182.

† Principles of Midwifery, and Diseases of Women and Children, 2d edit. p. 542.

“To remove,” says Dr Hamilton, “the habit on which the duration of the complaint depends, vomits repeated daily or oftener, according to the exigency of the case, and frequent change of air are to be chiefly trusted ‡.”

It is unnecessary to accumulate quotations on this head; with the exception of Dr Brown and a few of his followers, the practice has been universal. Each of them, no doubt, explains its effects in his own way, but from the general agreement of the whole, we may rest satisfied, that the practice has been very generally attended with advantage. Indeed no person who has ever seen its effects, could entertain the smallest doubt on the subject. Dr Brown, however, tells us in his usual dogmatic style, “that the change of situation or climate is a tale, and the practice of vomiting, death. Indeed,” continues he, “since the disease is an asthenia, vomiting, which is so very debilitating an agent, cannot fail to be of the highest detriment *.”

Emetics may be prescribed at every period of the disease, but with very different objects in view. The first object is to clear the stomach

‡ Hints for the treatment of the principal Diseases of Children, p. 170.

* Brown's Elements of Medicine by Beddoes, vol. ii. p. 242.

of its crude and vitiated contents. For this purpose, a full dose of ipecacuan is generally sufficient. But an emetic of ipecacuan, with a small quantity of tartarite of antimony combined, will be much more effectual. Such an emetic if given all at once, operates soon and briskly, and leaves the patient much lightened and relieved. The ipecacuan and tartarite of antimony may be given in powder, or a combination of the ipecacuan and antimonial wines may be substituted.

Besides the natural contents of the stomach, the patient generally rejects an immense quantity of tough mucus. The origin of this mucus is uncertain. Some suppose it to be the matter coughed up and swallowed by the patient; others suppose it to be a vitiated secretion from the stomach itself. From whatever source it may have arisen, the relief obtained by the patient is generally in proportion to the quantity evacuated. When the food only is rejected, the patient feels more exhausted, while the weight and oppression about the precordia remain nearly the same, as if no vomiting had taken place.

Sometimes the matter rejected consists chiefly of bile, or a mixture of bile and mucus, with the

ordinary contents of the stomach. In these cases, the pain of vomiting is always great, but the ease obtained afterwards is perhaps more remarkable than in any other circumstances.

An emetic of the kind I have mentioned, ought always to be given, as soon as the disease is discovered, and repeated once a week or oftener, whether spontaneous vomiting occur or not. If the appetite fail, or if the patient appear oppressed or languid, it should be repeated every day, or every second day, and its effects carefully marked. If it produce only very slight vomiting, no good is to be expected. It is only, as I have already observed, when a large quantity of mucus or bile is discharged from the stomach, that the patient feels essential relief. I have been told by patients, when two or three emetics had been taken, without producing any thing of that kind, that there was no such matter in the stomach, but a still more powerful dose, soon convinced them of the contrary.

For this purpose, it often requires very strong emetics. To a child of two or three years of age, I have often given ten grains of ipecacuan, and a grain of tartar emetic. And in some in-

stances, where less would not serve, I have prescribed double that quantity, and even more. The stomach and bowels in Chincough, as in Croup, are generally in a very torpid state, and require very powerful doses to have any effect. I seldom venture to give large doses of tartar emetic by itself; but combined with ipecacuan, I have no fear in going almost any length. It is to be remarked, however, that these observations apply only to children at the beginning of the disease, and who are otherwise stout and healthy. To the more delicate, the ipecacuan alone will be quite sufficient.

Emetics are frequently prescribed, with a view to relieve the breathing. In this case they act as expectorants, first in promoting the secretion of mucus in the air cells and bronchiæ, and afterwards assisting the expulsion of it, in the act of vomiting. When we have these objects in view, the emetic should not, as in the former case, be given all at once, but in small divided doses. To a child of two years of age, two grains of ipecacuan may be given every quarter of an hour, till it produce vomiting. If the child be strong, to each two grains, an eighth or a tenth of a grain of tartar emetic may be added.

But in these cases, the antimonial solution is generally the best prescription. Of a mixture, with a grain to the ounce of fluid, a tea or a desert spoonful, according to the age and strength of the patient, may be given every twelve or fifteen minutes till it operate, which will generally happen in an hour, or an hour and a half. The more sickness it produces before the vomiting commences the better. I have seldom ventured to carry this practice to any great length, in very young children. In those farther advanced, I know of no plan of treatment equal to it.

It has been a question among medical men, whether the tartar emetic ought to be simply dissolved in water, with a little sugar to make it palatable, or whether something else might not be added to it, to make it more certain in its operation, and to cause it to act more kindly on the stomach. One Gentleman tells me, that he thinks the mixture greatly improved by adding a few grains of the carbonate of potash, to each ounce of the solution. Another says, in place of using common water, he takes the same quantity of the saline mixture, with rather an excess of acid in it. I have tried all of them, and feel

disposed to give the preference to the last. For a considerable time, I have used it almost constantly, and its effects have been very certain.

Squill vomits have been much used in Chin-cough, from an idea that they may also act as expectorants, and relieve the cough; but this opinion does not appear to be well founded. "I had some years ago," says Dr Armstrong, "an opportunity of trying both the antimonial solution by way of puke, and vomits compounded of ipecacuan wine and oxymel of squills, in a boy about eight years old, who was ill of Hooping cough, and it plainly appeared to every body about him, that though the latter cleansed the stomach very well of the phlegm, yet it had not so good an effect upon the cough as the former, neither did he perspire so plentifully after it. Both kinds were repeated several times, and the event was always in favour of the antimonial vomit *."

These observations of Dr Armstrong, accord completely with my own experience. For some time I gave a preference to squills, either by themselves, or combined with ipecacuan, but finding their emetic effects less certain; and per-

* Armstrong's Account of the Diseases of Children, p. 104.

ceiving no superior efficacy in their pectoral powers, I have for many years trusted, almost exclusively, to the antimonial solution.

From what has been just now stated, it will be seen that the purposes which vomiting may serve in the treatment of Chincough are numerous. It relieves the stomach and bowels from vitiated secretions. It determines to the surface, and as Dr Cullen would say, removes the spasm of the extreme vessels. In cases, where secretion from the inflamed mucous membrane comes on slowly, it promotes it, and where it has become too profuse, we know of no means equally efficient for its expulsion.

In giving a summary of the practice of some of the best authors who have written on Chincough, I shall afterwards have occasion to revert to the subject of emetics; in the mean time we go on to consider some of the other parts of the treatment.

THE USE OF PURGATIVES.

WE have seen that the stomach is generally in a loaded state in the commencement of Chin-

cough, often through the whole course of the disease. This may be partly relieved by emetics, as they remove for a time the contents of the stomach, but unless a more vigorous and healthy action of the bowels be induced, the relief obtained is only of a very temporary nature. The patient, too, by being always deprived of the nourishment from the aliment taken in, must lose strength, and become gradually worse. Emetics are chiefly useful, when followed up by a due proportion of purgatives.

We have seen, in considering the history and nature of this disease, that in most cases the bowels are remarkably torpid, and that the matter evacuated is generally of a very foul and offensive nature, or in some other respect different from what it ought to be. Sometimes it consists almost entirely of mucus, and without smell; sometimes of a matter as dark as pitch, and remarkably fœtid. Often it exhibits a great superabundance of bile, and in a few cases, I have seen the bile entirely wanting, and the stools of a very white colour as in jaundice. Generally the patient is costive; in some few instances, I have met with a troublesome diarrhœa.

It is obvious, from this account of the state of

the bowels, that the same purgatives will not be equally proper in every case, nor are they always to be exhibited exactly in the same manner. It may be remarked, however, that in prescribing purgatives, we have only one object to be kept steadily in view, that is, to promote a natural and regular alvine excretion. If emetics are necessary in most cases, purgatives are still more so. It often happens indeed, that the emetic has both effects, and when it has, it always does more good than when it has merely the one. The antimonial emetics, particularly when given in small divided doses, are apt to pass into the bowels; and sometimes, though given with a view to excite vomiting, they act merely as purgatives.

In prescribing purgatives in Chincough, I have generally found it advantageous to give more or less calomel. No other purgative has the same effect in discharging the mucus, and none act so favourably, whether there be a superabundance or a deficiency of bile. Along with the calomel, more or less of some antimonial preparation is generally useful. With this view I have been much in the habit of joining a small quantity of the antimonial powder, or a little of the tartarite

of antimony. When we suspect considerable accumulation, and when a brisk cathartic effect is wanted, jalap may be prescribed along with the two preceding articles. I have also frequently given aloes, gamboge or scammony, and followed up the whole with an infusion of senna, more or less calcined magnesia, or a weak solution of some neutral salt. When there is any particular irritation in the bowels, small doses of castor oil, prove extremely useful.

In medicine, as in most other things, people are apt to run into opposite extremes. The ancients were far too complex in their prescriptions, the moderns, in my opinion, are often too simple. If you wish to produce an easy and an effectual operation on your patient, let three, four or more articles be compounded together, and you will seldom miss your mark; whereas by trusting to one, or even two, in nine cases out of ten, you will either do more or less than you intended. Even the combining two or more neutral salts, not only makes the medicine easier to take, but also renders it much more effectual.

I have more than once, pointed out a sort of analogy between Croup and Chincough. This is not more remarkable in any thing, than in a

most obstinate torpor of the bowels. I would not be understood to say, that it is equally frequent, or that it is equal in degree in both diseases, though I have met with it very often, and to a very great extent in the latter, as well as in the former. In such cases, nothing will do, but the most powerful purges, and even these must be given in large doses.

I believe there are few cases of Chincough, where emetics are not required, or at least, where they would not be of service to the patient; and I think there are none, where purging can be safely omitted. Even in the very mildest cases, that have ever come under my observation, the bowels have always been more or less deranged. And though the patient's health might not appear to have suffered much, yet on producing a thorough evacuation from the bowels, the improvement which followed, has always been very obvious and striking. In these cases too, we are not merely to calculate on the symptoms we have removed, but on the more aggravated symptoms we may have prevented. I believe the disease would seldom prove either dangerous or fatal, were we sufficiently on our guard from its commencement; but the accumulation

in the stomach and bowels goes on, without attracting our notice, till it has acquired too great an ascendancy over the system, for any plan of treatment to be of service.

When on this subject, I would wish to direct the attention of the reader to an object which purging serves, and which is perhaps too much overlooked. If you begin to purge early and regularly, you keep up a uniform secretion into the bowels, they continue to be easily acted upon, and moderate discharges are procured daily. If purging be neglected at an early period, accumulation is likely to be the consequence; but this is not the only, nor perhaps the worst effect which follows. The secretions into the intestines are suppressed, and if this once take place for any considerable length of time, it seems to exceed the power of purgatives to restore them.

I have been struck with this fact in a variety of cases, and in a variety of diseases. In many instances, where no evacuation could be procured from the intestines for several days before death, and when it was supposed that great accumulation had taken place, on dissection, almost nothing whatever was discovered. This is the case in many of these obstinate instances of

Croup, where no medicines whatever can be made to act on the bowels. It happened too in a very remarkable degree in the case of my son, and is always a most untoward circumstance.

When such cases occur, it is in vain to persist in the use of purgatives or clysters. Leeches or a blister applied to the abdomen, or mercurial frictions long continued, may subdue the disease; if they fail, I know of nothing more likely to succeed. The bowels in such cases seem to be in a sort of semi-inflamed state, and that affection must be removed, before their natural action can recommence. It is in all probability owing to the resolution of this state of the bowels, in Fevers and other diseases, that critical and spontaneous evacuations from that quarter, give so much relief.

This state of the bowels may be prevented by a steady use of purgatives, but if once it has fully taken place, we should persist more or less in their use, but the aid of other remedies must also be called in.

The best time to exhibit emetics is in the afternoon, or in the evening. The patient generally, after the operation is over, feels easy and disposed to sleep. The purgatives should be

given in the morning, or as early in the day as possible, that their operation may be over by night, so as not to disturb the patient's rest. Willis, Astruc, Sydenham, and all our best authors strongly recommend the use of purgatives.

CHANGE OF AIR

Is another part of the treatment, which has been highly spoken of, and I have no hesitation in saying, that in many cases, it is of the greatest service. It requires discrimination, however, to say where it may be useful, and where it may prove hurtful, for it certainly has done both good and harm.

Change of air seems to be a remedy later discovered than either of the two former. It is not, so far as I recollect, mentioned by any author, prior to the year 1754, when Dr Forbes published his *Thesis de Tussi Convulsiva*. Since that time it has been frequently recommended; but I do not find, at least among medical men, that it has met with any great share of praise.

“Pure air,” says Mr Hayes, “is of the greatest importance in the case of Hooping

cough. It is necessary in all its stages; but absolutely so where it is very bad, and has laid great hold of the constitution. The air of large towns and populous places, always aggravates the Hooping cough, and however proper it may be for the sick to stay in them till the dangerous part is over, it is really necessary for the patient to go somewhere into the country to remove the effects of the disease, and prevent a relapse, or a consumption, which too often succeeds this tedious and frequently fatal complaint *."

I agree with Mr Hayes that pure air and change of air, are exceedingly necessary to bring round the patient from a convalescent to a confirmed state of health; but this is not the only period in which change of air may be useful. I have known the disease kept remarkably mild in many individuals, and in several large families, by having the children almost constantly in the open air from its very commencement; driving them about from place to place in carts and open carriages. I have known many, where the disease was very severe, on being taken out into the open air, get better every hour as they proceed-

* Serious Address respecting common Coughs and Colds, &c. p. 130.

ed on their journey; the patients scarcely giving a single cough, and the fever going off entirely.

It must be confessed, however, that on many occasions children have been much worse on being freely exposed to the open air. I saw several very remarkable instances of this last winter and spring. Some people, who had formerly experienced the benefit of change of air, were anxious to give it a trial, without reflecting sufficiently on the nature of the case, and the season of the year. The weather was too cold, hence, in place of being benefited by the experiment, all who saw them were convinced that it had done much mischief. It would be a desirable thing, therefore, if such rules could be laid down, as might enable practitioners to say in what circumstances a change of air would be advisable, and on what occasions it ought to be avoided.

Though nothing very certain can be said on this head, yet a few hints may be thrown out, and left for future experience to correct and improve.

I have never seen children in any state of the disease, the worse for being taken out in the summer months, unless too much exposed to the sun in the middle of the day, or to the cold and

damp in the mornings and evenings. In mild and ordinary cases, when much without doors, they bear considerable extremes of heat and cold without the least inconvenience. Indeed there is something in slight bronchial inflammations, and I take Chincough always to be a disease of this nature, which renders a long exposure to the open air not only safe, but even useful. I once experienced a remarkable instance of this in my own person.

Some years ago, while making a short stay at Manchester, I was seized with a pretty severe catarrh and hoarseness, which had continued unabated for several days. After some ineffectual attempts to remove these symptoms, I took my seat in the mail for Glasgow. In the course of a few hours, I found myself much better. The hoarseness began to abate, and I found my breast much easier. By the time I got to Carlisle, I was almost well, and completely so before I reached Glasgow. This journey took nearly two days and two nights constant travelling, and though in the month of May, the evenings and mornings were cold.

I shall mention another fact with regard to bronchial inflammation, which though perhaps

a little out of place, deserves to be recorded. I was told some time ago, by my friend, the Rev. John Duncan of Ardrossan, that there are about Saltcoats, a small sea port town in the west of Scotland, a number of fishermen, who go out so many months of the year to the herring fishing, and stay at home nearly idle the rest of the time. During their stay at home, many of them regularly contract such colds, coughs and other pectoral affections, as would lead an inexperienced observer to think they must soon die of Consumption. But these men are no sooner at sea, exposed day and night to the open air, and frequently wet to the skin from the one end of the week to the other, than they begin to recover their health, and by the time they return, they are not only free from all complaints; but so strong and healthy, as hardly to be known for the same individuals.

From these and many other direct and analogical facts which might be produced, it would appear there is something in the nature of bronchial inflammation, which renders exposure to the air peculiarly beneficial. But I would remark, that though Chincough in its mild and ordinary state, consists merely in a topical affec-

tion of the bronchial system; yet we have seen from dissection, that it often extends deeper, affecting the substance of the lungs, and even the pleura. It is in these circumstances, I presume, that the patient receives no advantage; but on the contrary, often suffers from an exposure to the open air. They indeed do not always suffer in the very time they are exposed, but they are no sooner brought into the house again, than we perceive them worse than before they were taken out.

The great question then appears to be, what are the symptoms which mark that state of the disease, when exposure will be useless, if not hurtful? To which I would reply, considerable fever, a strong, full and frequent pulse, violent cough, pain in the breast, and above all, great oppression of breathing. If these symptoms should continue after vomiting and purging have been premised, I should strongly suspect, that something else than change of air, will be necessary. On the other hand, when the most of these symptoms are not present, or present only in a moderate degree, change of air will not only in many cases remove them; but in most cases will prevent the disease from taking on a more danger-

ous form. It is in this way, that I would be disposed to account for the great advantage derived from the early adoption of the practice, particularly when the season is favourable.

It has been generally remarked, that any change of air is useful. That it may be from a better to a worse, as well as from a worse to a better. I can hardly believe this. It no doubt frequently happens, that a child is better on being taken from one place to another, even where the air in the latter place, is supposed to be worse than in the former. Here, however, I would be disposed to attribute the good effects, not to coming into a more impure atmosphere, but to the child's being abroad at all, any atmosphere being better than confinement to the house.

It has been a practice to take children designedly into situations where certain impurities were known to exist in the air to be respired. We shall advert to this practice afterwards; at present my observations apply merely to the removal from one place to another, where the air is supposed to be equally good, or nearly so in both; or where it is inconvenient to make any

considerable change of place, but to have the patient as much as possible without doors.

Dr. Ferriar seems to think that the state of the atmosphere, may be influenced by the nature of the soil, and has added some very curious facts to prove this hypothesis. “The beneficial effects,” says he, “of the lime stone soil of Derbyshire, has long been known to the old practitioners of this town, in the cure of Hooping cough, and I have had an opportunity of verifying it in some very striking instances. If the climate of the Peak were milder, I am persuaded that many cases of spasmodic asthma might be relieved by residence at Buxton; it is a well known fact, that broken-winded horses are free from this complaint while they remain there. This may be attributed in some degree to the quantity of lime which the brooks hold in solution; and in some measure to the impregnation of the atmosphere, from the numerous lime kilns in the neighbourhood *.”

Speaking on this subject, with a medical friend of mine in this city, he mentioned that he had practised many years in the neighbourhood of a pretty high mountain, where it was custo-

* Medical Histories and Reflections, vol. iii. p. 222.

mary to take the children to the top of it, and expose them to the atmosphere. He had frequently recommended this himself, and always remarked, that children were much better by such an exposure, than if they had gone to a lower situation, or from one place to another on the same level. He was disposed to attribute some of the good effects of such a change, to the diminished pressure of the atmosphere. Dr Parr, in his Medical Dictionary, states the very reverse of this, "we have thought," says he, "the more high elevated situations less useful, and the lower damp ones more serviceable," but he candidly confesses, there is great uncertainty in every part of the treatment of this disease.

In a former part of this work, I have mentioned that there is probably some connection between Typhus and bronchial inflammation. This supposition receives a sort of confirmation from this circumstance, that patients labouring under Typhus, and Fevers nearly allied to it, have received great benefit from a long and free exposure to the open air. I had once a young woman so ill in Typhus, that I could hardly have ventured to have her removed from one street

to another; yet the relations took upon themselves, to remove her to a distance of sixty miles, in an open cart. In doing this, they were the greater part of two days and two nights on the road, in the end of April. By the time she got home she was greatly better, and was never afterwards confined an hour to her bed. On this subject I might quote the experience of Dr Jackson and others; but this would be foreign to my present purpose.

I have thought proper in the first place, to discuss vomiting and purging; because I believe there are few cases where both are not required, and perhaps none where they might not be useful. To these I have added change of air, which is always beneficial, when the season permits; and next to vomiting and purging, is perhaps the most useful remedy in Chincough. By a timely application, and judicious management of the three, the great majority of cases may be successfully combated. But instances, too, will often occur, either from neglect in the beginning, or mismanagement afterwards, or from some unfav-

ourable tendency in the disease itself, which will require a mode of treatment entirely different.

THE USE OF BLEEDING.

WE find bleeding very generally recommended by the ancients. Willis speaks of it as a very useful remedy. Sydenham remarks, that it is by bleeding and purging alone, that children are to be cured in Chincough. But from this indiscriminate mode of recommending the practice, we can derive little useful information. Hoffman appears to have thought more accurately on the subject. After giving a very distinct account of a malignant epidemic Chincough, which prevailed at Berlin, in 1709, he remarks, that when the fever was violent, with great difficulty of breathing, bleeding was highly useful; but in other circumstances he dissuades from the use of it, as not only unnecessary, but hurtful ‡. This sentiment of Hoffman, accords very completely with my own experience, in the treatment of this disease. A careful attention to the

‡ Opera edit. Genev. 1740. Tom. iii, Sect. 2. Cap. 3.

state of the circulation and the breathing, will, in most cases determine the practice.

“ When the Chincough is violent,” says Astruc, “ we should have recourse to bleeding, for, though the lungs are not inflamed, the œsophagus, &c. are. A child of eight or nine month sold, may be blooded once; if he exceeds two years, twice §.” Why may not a child of eight or nine months, be blooded as often as one of two or more years, provided the quantity taken each time, correspond to the violence of the disease, and the age and strength of the patient? I should rather be disposed to say, that the younger the child is, the less should be taken at a time, and the oftener should the operation be repeated.

Dr Sims remarks, “ that bleeding was extremely beneficial during the first stage, and the blood when drawn shewed much siziness ||”. Dr Sims does not take notice of the state of the fever, or of the breathing, in these cases where he found the bleeding so beneficial, but from his mentioning that the blood when drawn was always very sizzly, it is more than probable that

§ Treatise on all the Diseases of Children, p. 147.

|| Observations on Epidemical Disorders, 2d edit. p. 93.

both were present to a very considerable extent. Indeed we seldom find the blood sizy in any case, till after the patient has laboured for some time under considerable increased arterial action, and that action is almost always attended with more or less difficulty of breathing.

In Dr Lettsom, we find a very strong advocate for bleeding. He remarks, “ that Dr Millar has collected the principal authorities upon this evacuation, and added his own opinion against its admission; but the very writers,” continues he, “ which Dr Millar hath quoted against bleeding, have recommended it under certain restrictions. Dr Burton expressly declares, in case of convulsion, *I then am forced, in order to gain time, to take some blood, otherwise I would never do it.* And Dr Lieutaud, recommends it, *when the fever is high, and the breathing laborious.* On the other hand, Willis, Sydenham, Astruc, Huxham, Home, Sauvages, Hillary, Bisset and other physicians, lay considerable stress upon the advantage of bleeding in this disease*.” The same author goes on to remark, that the very reasons which Dr Millar has produced against letting blood in this case, appear equally to militate

* Medical Memoirs of the London Dispensary, p. 243.

against vomiting and laxatives, evacuations which he himself recommends.

“ Indeed,” continues Dr Lettsom, “ we might with the same propriety object to bleeding in a Pleurisy or in an inflammatory Fever, when the patient has been exhausted; but this is no just argument against bleeding, in the commencement of these diseases, or of the Hooping cough, where the symptoms indicate inflammation.” Dr Lettsom goes on to remark, that “ This disease very rarely appears, without a cough having previously existed for some days or weeks, and hence, it will be less necessary to take away blood from infants already weakened; but there are instances where children, of a considerable degree of strength and health, have been attacked by the Hooping cough, which hath been early accompanied with fever, hæmorrhagy, contractions of the extremities, pains in the breast, hard pulse and bloated face, indicating congestions in the vessels; under which circumstances, I presume no reasonable objections can be urged against venesection, proportioned to the strength of the patient and the violence of the symptoms.

“ I have been just informed of three unfortu-

nate cases of Hooping cough; in one a suppuration had taken place in the lungs; and in the other two, there was considerable inflammation on the coats of the lungs, with remarkable adhesions to the pleura, though the trachea was little affected. Had not bleeding been indicated in these cases? So also the dissections I have seen, and those related at the conclusion of this section would infer *."

"The method I have lately adopted," says Dr Armstrong," for curing this disease, is as follows. If the fever is high, when I am first called, and the child of a sanguine habit, I advise bleeding; and if the patient is costive, I direct a cooling clyster to be administered, and the body to be kept open by some gentle purgative †."

"In plethoric subjects," says Dr Cullen, "or in others, when from the circumstances of the cough and fits, it appears that the blood is difficultly transmitted through the lungs, blood-letting is a necessary remedy; and it may be even

* The cases referred to here, as justifying the use of the lancet, are already given. They are cases 15th, 26th, and 27th of the Dr's Medical Memoirs.

† Account of the Diseases most incident to Children, p. 104 and 114.

necessary to repeat it, especially in the beginning of the disease *."

Even in the warm climate of Barbadoes, Dr Hillary recommends venesection as not only useful, but in many cases absolutely necessary. "The indications of cure," says he, "must be to lessen the quantity and attenuate the viscosity of the fluids, and abate the stimulus. Wherefore bleeding such children as are of a sanguine plethoric constitution, and keeping the body moderately open, and to attenuate the viscid fluids as much as we can. If the symptoms increase, and the patient's pulse will permit, more blood may be taken away †."

"A Peripneumony," says Dr Darwin, "very frequently supervenes and destroys great numbers of children, except the lancet or four or six leeches be immediately and repeatedly used. When the child has permanent difficulty of breathing, which continues between the coughing fits: unless blood be taken from it, it dies in two, three, or four days of the inflammation of the lungs. During this permanent difficulty of breathing, the Hooping cough abates or quite

* First Lines of the Practice of Physic, § 1416.

† Observations on the Air and Diseases of Barbadoes, p. 47.

ceases, and returns again after once or twice bleeding; which is then a good symptom, as the child now possessing the power to cough, shews the difficulty of breathing to be abated. I dwell longer upon this," continues he, "because many lose their lives from the difficulty there is in bleeding young children, when the apothecary is old or clumsy, or is not furnished with a very sharp and fine pointed lancet. In this distressing situation the application of four leeches to one of the child's legs, the wounds made by which, would continue to bleed an hour or two, is a succedaneum; and saves the patient if repeated once or twice, according to the difficulty of the respiration *."

To these authorities in favour of bleeding, I shall only add one more. "When the breathing is very difficult," says Mr Hayes, "and the violence of the cough occasions a blackness in the face and neck with symptoms of suffocation, it is necessary to take away a little blood either from the arm, or the application of leeches to the temples. I have known an ounce or two of blood from the nose, give a critical turn to the disease. The blood being detained in the lungs,

* Zoonomia, vol. iii. p. 377.

and the great vessels leading to the head, when the breathing is long suspended by coughing, makes it necessary to bleed in proportion to the age and strength of the patient, and to repeat it, if the difficulty be not removed †.”

From all these different authorities, it would appear that there is a pretty general conviction, that Chincough is apt to terminate in pneumonic inflammation, and that where it does so, bleeding is the only remedy on which we can rely with confidence. I have taken pains to establish this important fact, not merely from the dissections formerly given; but from the general experience of our best writers on the subject. But though we have proceeded thus far in ascertaining the utility of blood-letting, yet still the practice is vague and undetermined. Many of the rules respecting it are doubtful, and facts are wanting to point out the cases where it may be admissible, and the precise limits to which it may be carried with safety and success. As the ascertaining of these points, is one of the principal objects of this publication, I shall endeavour to place them in as clear a light as possible.

The general conclusion from all my research-

† A Serious Address respecting Coughs, Colds, &c. p. 125.

es respecting the nature of Chincough, is, that wherever the disease proves severe or dangerous, it is either by the inflammation extending suddenly to the whole, or the greater part of the mucous membrane of the larynx, trachea, bronchiæ and air-cells; in other words, by its proving a severe case of bronchitis: or it is by the inflammation penetrating deeper than this membrane, and affecting the substance of the lungs and pleura, and thus becoming a case of real Pneumonia. I have elsewhere endeavoured to point out the symptoms which characterize each of these affections, and shall now merely advert to some of the more remarkable of them, on a knowledge of which the practice ought chiefly to be founded. Bleeding is the remedy in both cases, but it requires much more discrimination to exercise it in the former, than in the latter.

When the inflammation is chiefly seated in the mucous membrane, the pulse is small, hard, and remarkably quick, and in a short time becomes so very weak and irregular, as not to be numbered. The breathing is not very difficult, when the patient is quite at rest, but he feels himself totally incapable of the least exertion. On the smallest attempt at exercise or speaking, the breath-

ing becomes hurried and laborious, but the patient does not complain of pain or stitches, as in real Pneumonia.

There is a general tendency to stupor and sleep. The skin is apt to become livid and the extremities cold. In cases of this kind, the *hoop* is generally, though not always present; the face during the kink becomes dark and turgid; and the patient is apt to fall into what have been termed the *draughts* or *dumb kinks*, and sometimes into real convulsions. I conceive the cases of my son and daughter, the third case, and the one I have subjoined to the third case, to have been well marked instances of this form of the disease; and I think Dr Darwin must have had similar cases in his eye, when he spoke of the disease becoming so suddenly fatal.

In my opinion, the great nicety of treating Chincough, depends on the early discovery and prompt removal of these symptoms. The state of the pulse, the general debility, and almost every other symptom seem to forbid bleeding, while we know from experience, that it is the only remedy that can save the patient.

I saw the very beneficial effects of the practice last spring, in the cases of my two youngest chil-

dren. The eldest a child of two years and a half, after having laboured under the disease for several weeks, became suddenly worse. Her breathing became oppressed, and her pulse remarkably quick, accompanied with all the other symptoms I have just now enumerated. By advice of some of my medical friends, she was bled three times in the arm, to the amount of about two ounces each time, and at intervals of twenty four hours. The good effects of these bleedings were very remarkable. The stupor and tendency to sleep went off, the pulse became more regular, and the breathing was greatly relieved. After this, that every thing possible might be done, she had two emetics, an occasional purgative, and some frictions on the back and breast with oil of turpentine. In two weeks she was again able to walk about, and very soon after got wholly clear of the disease, and has since enjoyed the very best health.

The youngest, a child between four and five months, rather of a plump habit, was seized much in the same way, but the disease was taken earlier. She had a large leech applied to one of her feet, which bled very freely. After that she was most obviously relieved, and continued to im-

prove daily without doing almost any thing else, except keeping her bowels open by gentle laxatives.

But one of the most striking cases I have met with, occurred in April last. On the 15th of that month, I was called to see a boy, of the name of M^cAdam, a little way out of town. He was about six years of age; naturally a strong healthy boy, and rather inclined to be fat. He had been under the Chincough for some weeks, but the disease was so mild as not to excite much attention, till two days before the time I saw him, when he had turned suddenly worse, and since that had been confined to bed. His face was swelled, and had a pale ghastly appearance. His lips were of a dark livid colour, and his extremities cold. His breathing was laborious, and his pulse so very quick that I could hardly count it. I strongly suspected the disease was hopeless, but to give him some chance for his life, six ounces of blood was immediately taken from his arm, a large blister applied to the breast, and a purgative of calomel, with a little tartrite of antimony, was ordered in the evening. He felt great relief after the bleeding, and likewise after the operation of the purgative, the blister al-

so did well. By next morning I found him so much better, that I now had very little doubt of his recovery. The purgative was repeated.

On the 17th the breathing being still somewhat oppressed, the father who had seen such remarkable relief from the first bleeding, insisted that it should be repeated, if it at all met my approbation; for he thought him rather worse since yesterday, though the purgative had operated well, and the blister was continuing to discharge. The bleeding was again repeated to the amount of five ounces. After this he took two or three purgatives, and recovered rapidly. I saw him about two weeks after, running about in apparent good health.

About the time I was attending M^cAdam, I was called to see a child about five months old, who had been ill of Chincough, for two weeks, and had just taken an epileptic fit. The child was rather of a plethoric habit, and for two days prior to the time I saw him, had been observed to be more oppressed in his breathing than usual, and the face and lips had become somewhat swelled, and occasionally of a dark colour; but as he had always been stout and healthy, no danger was apprehended. I ordered two large

leeches to be applied immediately to the feet, a smart dose of calomel to be given in the evening, and followed up next day with an infusion of senna. After this the child recovered rapidly, and had no more return of the fits. One leech was afterwards applied, and the purgatives were continued occasionally for several weeks.

I could give many similar cases, some of which have occurred lately, and others several years ago, but it could serve no useful purpose to carry this investigation farther. From what we have seen, the symptoms which mark this particular state of the disease, are pretty uniform, and the method of cure, simple and obvious. The great matter is to be on our guard against the approach of such unfavourable symptoms, and to adopt at an early period the appropriate means for their removal. If they are not removed at a very early period the organic affection proceeds rapidly to a crisis, while the debility becomes insurmountable.

With regard to the occurrence of ordinary pneumonic inflammation in this disease, it is hardly necessary for me to make a single remark. The symptoms cannot be mistaken, and hardly a doubt remains with regard to the nature of the

treatment which must be adopted. Here the pulse is strong and full, the heat of the body increased, the face flushed, the cough violent, the breathing difficult, and attended with stitches or pains in the chest. Under such circumstances there are few, who would hesitate to bleed the patient at first sight, and no doubt could remain with any one, after seeing the effects of the operation. All or most of the observations I have quoted at the beginning of this section, apply to this state of the disease. If bleeding be neglected in such circumstances, the consequences described in the fourth and fifth cases may be expected. The exciting of tubercles in the predisposed, extensive adhesions of the pleura, or very probably the formation of an abscess.

As to the manner of bleeding; in the very young, or in those who have been much exhausted by the long continuance of the disease, I prefer leeches; in those a little farther advanced, cupping and scarifying is a more certain and effectual remedy. Indeed, I am surprised this practice is not more general than it is in many diseases. A few ounces taken in this way near the part affected, does not weaken the patient, and never fails to give more relief than double.

the quantity taken from the general system. When the patient is farther advanced and stronger, a sufficient quantity of blood can often be obtained from one of the veins on the back of the hand, from one of the veins of the arm, or from the jugular. In cases where the head is threatened, the last of these is unquestionably the most effectual.

The quantity to be drawn at a time, must depend on the urgency of the symptoms, and the age and strength of the patient. I generally consider two ounces for a child of one year, and an ounce for every year the patient is older, a full bleeding. The frequency of repeating the operation, must depend on nearly the same circumstances. We have sometimes to repeat the operation at the end of six or twelve hours, sometimes at the end of twenty four hours, and often not till the second day. Though there is a danger in delaying the operation too long, yet I think it has generally a better effect, on the recurrence of something like an exacerbation, than when repeated too early.

With regard to bleeding in general, I would remark, that it is not to be regarded as a regular part of the treatment of Chincough. It only be-

comes necessary on the accession of certain symptoms, and when these are removed, or when there is no longer any hope of their removal, bleeding should be abandoned of course. The symptoms requiring bleeding, have already been noticed, they are chiefly such as shew congestion, increased action, or actual inflammation, in the head, chest, or abdomen.

BLISTERS AND ISSUES.

I HAVE already noticed the beneficial effects of cupping and scarifying. The next remedy that deserves notice is blistering. This appears to have been employed in the cure of Chincough, as far back as we have any account of the disease. Willis speaks of it as a regular part of the treatment. Among his more immediate followers, however, it does not appear to have met with much attention. Indeed, the practice is hardly mentioned, prior to the time of Dr Cullen. The Dr remarks, that, “to obviate or remove the inflammatory determination to the lungs, that sometimes arises in this disease, blistering is often useful, and even repeated blistering

has been of service; but issues have not so much effect, and should by no means supercede the repeated blistering that may be indicated. When blisters are proper, they are more effectual when applied to the thorax, than when applied to any distant parts *.”

Among the more modern authors, blistering is generally mentioned as a remedy. I have seldom or never omitted applying one, in cases where the breathing was much affected. I must say, however, that I have not seen much advantage from blistering, till after the violence of the disease was subdued by other means. In the cases of my son and daughter, blisters were repeatedly applied, and yet I could hardly say I perceived the least benefit from them.

After the fever and other more urgent symptoms have been removed by bleeding, purging and other means, a blister may be applied with the very best effects, and I agree with Dr Cullen, that the nearer it is applied to the part affected, so much the better. If the *hoop* be a very remarkable symptom of the disease, it may be applied with great advantage round the neck; in other cases it may be applied to the

* First Lines of the Practice of Physic, Sect. 1418.

breast, to the sides, or to the back, as may be most convenient, or as the patient may point out the seat of his uneasiness.

When a blister is to be applied, it ought to be large, and spread so thick as to rise in as short a period as possible. In this respect, practitioners commit very great errors. If a blister rise at all, they think every purpose is served that a blister could accomplish; but this is by no means the case. A blister made too weak, or spread too thin, soon dries, and merely raises the cuticle, and even to do this, requires a considerable length of time; whereas, one thickly spread, with well made plaster, raises not only the cuticle, but also the rete mucosum, and does it too, in a much shorter period. Hence we have the operation not only sooner, but more effectually accomplished; and it will always be found with blistering, as well as with bleeding, the sooner and the more completely it is effected the better.

As I conceive this to be a point of great practical importance, I shall quote the passage which first drew my attention to it. Mr Cruikshanks in a letter to Mr Clare remarks, that, “when a blister has been applied to the skin of a negro,

if it has not been very stimulating, in twelve hours after, a thin transparent greyish membrane is raised, under which we find a fluid. This membrane is the cuticle or scarf-skin. When this with the fluid is removed, the surface, which was under them, appears black; but if the blister had been stimulating, another membrane, in which this colour resides, would also have been raised with the cuticle; this is the *rete mucosum*, which is itself double, consisting of another very transparent membrane, and of a black web very much resembling the *nigrum pigmentum* of the eye. When this membrane is removed, the surface of the true skin comes into view, and is white like that of a European *."

I have had no opportunity of trying this experiment on a negro, but am fully convinced, from long experience, that there is a very great difference in blisters according to the manner in which they are made up and applied. The practice of putting dry flies on the surface of the blister, is also a bad one. If the flies be good, and the plaster well prepared, it requires no such assistance. Besides, the loose particles of the flies are apt to insinuate themselves into the skin, and

* White's account of the regular gradation in Man, p. 103.

adhere to the sore after the blister is removed, giving the patient very unnecessary uneasiness and often producing strangury.

I cannot from experience say much, as to the effects of issues in this disease. Their operation must be too tedious to be trusted in the more acute stages. Here every thing depends on promptitude. Towards the termination of the disease, when the symptoms have sunk into a chronic state; when the mucous membrane has suffered in its structure, or is in a state of actual ulceration; when tubercles are beginning to form, or when some portion of the lungs, or of the pleura is suffering from inflammation, an issue promises to be of very great service.

In similar affections of the chest from other causes, I have seen the most beneficial consequences from the establishment of an issue in the side, or near the principal seat of the disease; or, what perhaps answers the purpose better, the insertion of a seton. When patients are averse to the insertion of setons and issues, a perpetual blister, or a succession of blisters, will have nearly the same effect.

About two years ago I was consulted in the case of a little girl of three years of age, who, in

recovering from Chincough, derived great advantage from blisters repeatedly applied to her side, and from promoting the discharge by occasional dressings of savin ointment. In this case I had every reason to suspect that the right lung or its pleura was suffering from chronic inflammation. She had a constant pain in her side, a teasing cough, and more or less difficulty of breathing. After using the blisters about five or six weeks, she got completely well, and has continued so ever since.

EMBROCATIONS AND LINIMENTS.

It is uncertain how long liniments and embrocations have been used in the treatment of Chincough. The first author, so far as I recollect, who has mentioned them, is Hoffman, in the account he has given of an epidemic Chincough which prevailed at Berlin in 1709. He recommends the application of volatile liniments to the stomach and belly, and seems to think that in many instances they were serviceable. After this we find them occasionally mentioned by medical writers, but their use has been chief-

ly extended by popular opinion, and the impositions of quackery.

“Objections,” says Dr Millar, “occur against the use of such strongly stimulating medicines as cantharides; but though a cautious prescriber would perhaps dread the internal use of this powerful remedy, yet there can be no valid objection against the external application of it; and since blisters and issues have been found to have great efficacy in some periods of this disease, it is probable, that the *tinctura cantharidum* may be rubbed upon the spine and breast with advantage. Liniments sometimes occasion an eruption of small pimples not only on the parts where they are immediately applied, but over the whole body, and when this happens they are generally more effectual *.”

“As I think I have seen good effects,” says Mr Hayes, “from effluvia; I have often contrived that the sick should be surrounded with the odours of *assafoetida*, garlic, oil of amber, or camphor, either by causing some one of them to be worn in a bag, or by dissolving them in some kind of spirit, as rum, &c. and rubbed

* Observations on Asthma and on the Hooping Cough, p. 178.

down the back and about the chest twice a day. But I give the preference to two drams of camphor dissolved in an ounce of oil of sweet almonds, for the above purpose *."

"It will sometimes," says Dr Underwood, "be of no small service to rub the hands and soles of the feet with the spirit. Ammon. Comp. several times in the day; or the spine of the back and the pit of the stomach with oil of nutmeg, or oil of amber; but as the smell of the latter is very unpleasant, it may be dispensed with, when the spasms are not exceedingly urgent †."

Mr Burns remarks, that "stimulating substances, such as a combination of soap, camphor, and oil of turpentine; or juice of garlic, or oil of amber, or of thyme, &c. rubbed over the spine or the thorax, and the stomach, have a good effect; and similar applications to the soles of the feet have certainly done much good ‡." The same author observes in another work, that "rubbing the spine and chest with some stimulating embrocation, is useful in mitigating the cough. Oil of amber with the addition of harts-

* Serious Address respecting common Coughs, Colds, &c. p. 127.

† Treatise on the Diseases of Children, vol. i. p. 305.

‡ Principles of Midwifery, and Diseases of Women and Children, p. 549.

horn, camphorated oil of turpentine, or anodyne balsam, are very proper for this purpose. Oil of thyme forms the active ingredient, in a quack embrocation frequently employed. Juice of garlic has been rubbed on the soles of the feet sometimes with good effect *."

"When the disease is not alleviated," says Dr Hamilton, "by the means already recommended, particularly by frequent emetics and change of air, stimulant substances may be rubbed over the ribs, or breast, or belly, evening and morning. The rectified oil of amber answers for this purpose very well. Roche's royal embrocation is used with the same intention; garlic ointment rubbed on the feet seems particularly efficacious, when uneasiness in breathing continues, during the intervals between the fits of coughing †."

About fourteen or fifteen years ago, Dr Struve of Gorlitz, recommended a particular method of treating Chincough, which deserves to be noticed. After directing a gentle emetic to be given to the patient, Dr Struve prescribed the

* Popular Directions for the Treatment of Diseases of Women and Children, p. 139.

† Hints for the Management of the principal Diseases of Children, p. 172.

following mixture to be rubbed in every two hours, in small quantities, about the region of the stomach. One scruple of emetic tartar is dissolved in two ounces of water, to which solution is added one ounce of the strong tincture of cantharides.—In a great variety of instances, the Dr observed, that a gentle perspiration came on during the night, after the use of this application; that the violence of the cough immediately abated, and in a short time the symptoms totally disappeared. He does not consider the emetics alone, adequate to produce these beneficial effects; but in combination with the mixture for external application, the disease seemed no longer so formidable as it had been *. This is no doubt a very powerful topical application, but on that account it must be used with the more caution.

In some of the preceding quotations mention is made of opiates applied externally. Of the use of opiate frictions in the cure of Chincough, we have a few successful examples by Mr Warren of London. These cases were originally published in the Medical and Physical Journal,

* Medical and Physical Journal, vol. i. p. 84.

and have since been copied into Mr Ward's work on the topical use of opium. "Liquid laudanum was rubbed all over the abdomen and pit of the stomach twice a-day, which gave great relief; the cough abated in frequency and violence, and the vomiting ceased †."

Such are the opinions of medical writers respecting the utility of various substances applied to the skin in Chincough. None of them have attempted to ascertain the circumstances in which they are applicable, or the manner in which they produce their effects. On this head, perhaps, little can be said.—Though I have some faith in frictions; yet I am fully convinced they ought never to be trusted alone, in severe cases; and even in mild cases, their effects will be more decided, when aided by other remedies.

Topical applications may act in three different ways. By the effluvium they produce impregnating the air, and thus coming in contact with the lungs. By being absorbed and conveyed into the general mass of fluids. By simply stimulating the surface of the body, and thus producing a sort of counter irritation.

Of the first of these I shall say nothing. If

† Facts establishing the efficacy of Opiate Frictions, p. 83.

the good effects of the process depend on the effluvium produced, that can be done much more conveniently and much more effectually by other means, to be described afterwards.

As to the medicine being absorbed, although there are considerable doubts on the subject, yet I think it more than probable. It is a process, however, on which we cannot rely with any considerable degree of certainty. In some instances, opium seems to act in a very beneficial manner when applied to the surface, and it is more than probable it does so by being absorbed. I have seen it relieve the cough, relieve the difficulty of breathing, abate the fever, and dispose the patient to rest. These effects will always be more decided after due attention has been paid to evacuations. I have seen the practice highly beneficial after the operation of an emetic, a purgative, and also after bleeding the patient, either topically or generally. I consider it the safest way in which opium can be employed.

What is termed the anodyne balsam, is a very good form, or perhaps nothing will do better than simple laudanum, well rubbed into the thorax and abdomen. The tincture, infusion or juice of tobacco, has sometimes been applied in the

same way, but of this I have had no experience.

In this country, garlic is a favourite remedy. Whether it acts as a simple stimulus on the surface of the body, or whether it be absorbed, it is difficult to say. It is usually applied in the form of ointment. This is prepared by bruising in a mortar, equal parts of garlic and axunge, or in place of the latter, oil or butter may be substituted. The ointment is rubbed on the back, breast and abdomen. Sometimes it is applied to the palms of the hands and soles of the feet. By others the garlic is grated down into strong spirits, and applied in the same manner. In both cases the applications are made every night at bed time. In no instance, however, are they to be used where there is any considerable degree of fever. I believe, like opium, they will be most beneficial after due evacuations.

I suspect that it is chiefly as a topical stimulant, that the greatest number of embrocations and liniments are useful; and I believe it will generally be found that they do most good, when they produce some degree of redness or eruption upon the skin. But though this is the principal object, yet the other considerations are

not to be wholly overlooked. Many of the substances employed, may act in all the three different ways. I think this is very probably, the case with respect to the oil of turpentine, the remedy I have been most in the habit of using. People have often been sensible of the smell of turpentine in their breath and urine, when it was only applied to the surface of the body. And the same thing will hold with regard to garlic, and some other substances.

I have mentioned Dr Struve's method of using the tartrate of antimony. A medical friend of mine tells me, he has long used a remedy somewhat similar, and with considerable success. He takes of camphor, of muriate of mercury, and of tartrate of antimony, a scruple each. These he unites with a small quantity of spirit of wine, and then rubs up the whole with about half an ounce of axunge. Of this composition a little is rubbed into the back and breast three times a day. He remarks, that it has a very sudden and powerful effect in relieving the dyspnœa and cough, and it generally produces some degree of inflammation or some eruption on the parts where it is applied.

It would be endless to enumerate all the dif-

ferent preparations which have been applied as topical remedies in this disease. As I have already remarked, they may be used as assistants, but they are seldom to be trusted alone. Opium, and some of the other narcotics, may be used, when there is a great degree of restlessness and irritation. When there is much torpor in the system, tincture of cantharides may be used in various forms, as also the oil of turpentine, the oil of amber, the oil of thyme, or these and other similar substances may be variously combined. When a more powerful stimulant is wanted, recourse must be had to the mineral preparations, particularly those of mercury and antimony, but they must be used with caution.

Of the effects of the tartrate of antimony, when applied to the skin, we have a very striking example given by Mr Goodwin, in the treatment of two cases of Angina Pectoris. The prescription he used was the following. To a dram of tartar emetic, he added half an ounce of camphorated spirit of wine, and a pound of warm water. Pieces of calico were dipt in this, and applied to the sternum several times a-day. “The stimulus from this application,” says Mr Goodwin, “produced an uncommon violent

eruption on the skin, in a short time having the peculiar malignant appearance of carbuncles, itching and smarting excessively, many of which suppurated, while hundreds were continually rising up, some as large as peas, others as small as pin heads. As soon as the eruption appeared, my patient experienced considerable relief from the spasmodic affections, and he went on gradually recovering, after continuing the above application two or three times a-day, for a month *."

Mr Goodwin used a similar preparation in another case, and with equally good effects. Taking the hint from this paper, I have, in various instances, used a solution of tartar emetic topically, for the relief of internal complaints, and with very considerable success. I have never used it in Chincough, but reasoning from the nature of the disease, I think it deserves a cautious trial. The violent eruption thus produced, may occasion a translation of the disease from the more internal parts to the surface of the body.

* Medical and Physical Journal, vol. vi. p. 321.

THE VAPOURS OF TAR.

I HAVE already made some remarks on the beneficial effects of change of air; but in addition to atmospheric air, various other gases and vapours have been applied to the lungs, in the process of respiration. Children have been taken down into deep mines, into coal pits, into tan yards, soap works, dye works, mills and other places, where there is any considerable effluvium or dust, excited by the process. These experiments are generally attended with some superstitious rites and ceremonies, which to the better informed part of mankind, are sufficient to render them ridiculous. The practice, of course, has been confined chiefly to the vulgar, and, so far as I have been able to judge, has not been attended with any very marked effect. The people who have the strongest faith in the marvellous, and in the efficacy of charms, have generally been the most forward to speak highly of the practice, and have always exhibited the largest stock of facts to prove their peculiar tenets. But, though I am not a believer in all that has

been said on this head, I am by no means prepared to consider the whole as groundless.

It has been a general belief, not only with the public, but also with some of the profession, that the vapours of tar were useful in pectoral complaints. Some authors indeed maintain, that the beneficial effects of sea voyages are to be attributed to the smell of the tar about the vessels. Hence phthisical patients have been directed to spend a great deal of their time about rope works, ship yards, and other places, where the air is strongly impregnated with the vapours of tar. How the same remedy, in a more decided form, came to be employed in Chincough, I have not been able to learn. I shall therefore simply state what I have heard on the subject, and what has come under my own observation. The remedy, so far as I know, has not been mentioned by any medical writer.

In the spring and summer of 1805, I happened to be attending the late Mr King of Johnston, and had a very distinct account from him of the manner in which he had treated his children when under the Chincough, and of the very singular efficacy of that treatment. He had six children under the disease at one time. In some

of them the disease had recently begun, in others it was farther advanced, and in one or two of them, it seemed to be nearly at a crisis. After using the remedy, I am afterwards to describe, for about two weeks, the disease disappeared in all of them, and they continued to enjoy the most perfect health. In two of them, some considerable time after, a common cough, or perhaps a slight return of the disease occurred, but this was instantly removed by two or three applications of the same remedy.

From these facts, and others which had led Mr King to try the practice, I was disposed to conclude that this was a most effectual cure for Chincough, and that it was equally so, without regard to the period of the disease, or the age of the patient.

In the autumn of that same year, while my family was in the country, the children were seized with Chincough. John the eldest was three years and eight months, Marion two years, and James eight months. John was the first seized, and when the treatment began, had been under the complaint about five or six weeks, Marion about three weeks, and James nearly about the same period. In all of them the disease

was well marked, particularly the two oldest, but in none of them was it attended with any considerable degree of dyspnœa or fever.

The treatment had been only continued for two weeks, when every symptom disappeared, and no relapse has since occurred, though they have often been exposed to the contagion.

Two circumstances occurred during the treatment, which tended very much to confirm me in its efficacy. Marion had an inflamed eye, which the crying, coughing, and fumes of the tar had increased considerably. In consequence of this the fumigation was omitted in her case four or five days. During that time the disease returned with its former violence, but on recurring to the treatment, it went off as before. James had never been very ill, and after the fumigation, the kinks went so completely off, that he appeared to have little else than a common cold, for which we thought it unnecessary to subject him to the fumigation. It was therefore omitted for some days, till he took one of these violent fits, which in this country are usually denominated *dumb kinks*. That afternoon he was subjected to the fumigation, and regularly afterwards along with the rest of the children,

and never had another kink of any kind. A slight cough remained for two or three weeks, but neither by that, nor by any other symptom, could his case have been distinguished from a common cold.

My belief was now strong, not only from Mr King's account, but from actual observation. The experiment as I thought was fairly made, no other treatment whatever having been adopted. I imagined also that the conclusions formerly drawn were correct, namely, that this remedy was effectual at all ages, and at all periods of the disease. I was induced, therefore, to recommend it to others; but was much mortified to find, that I almost uniformly received for answer, that it had done no good; and several hinted, that it had even proved hurtful. It was confessed, indeed, that many were cured, but these were mild cases, and in all probability would soon have got well without any treatment.

One thing was particularly remarked, that when the children vomited readily, at the time, and discharged a quantity of clear viscid mucus, they did well. But I was concerned to find that I could do no good in the more severe cases. At first I was apt to impute the failure of the

remedy to its not having got a fair trial; but I was at least fully convinced, that it was not to be regarded as the universal cure I had at one time anticipated. The amount of my belief now was, that in mild cases, where little or no treatment was necessary, it might be effectual: and that in cases where vomiting was beneficial it might do good, but perhaps not more than a vomit in any other form.

From this time, till very lately, no farther experiments were made. The facts I have mentioned became sometimes the subject of conversation, and I mentioned them annually in my lectures on the Practice of Medicine; but this was done with no direct view to the improvement of medicine. I considered them merely as curious anomalies, from which, in the present state of our medical knowledge, no useful deductions could be made.

About the middle of December last, I was called to see three children ill of Chincough. One of them, a boy of seven years, had been ill about three or four weeks. The kinks were distinct and well formed, but there was little or no fever. The other two were girls, and younger. In them the disease had been of shorter standing; but

the symptoms were much more severe. Purging and repeated emetics had been used, but with no very permanent advantage. The kinks were frequent and severe, and both laboured under a considerable degree of fever. The fumigation with tar was casually mentioned, and some conversation took place respecting the facts I have stated. This made so great an impression on the minds of the relations, that at my next visit, I very unexpectedly found they had tried the remedy. It was repeated three times after that, but with no very apparent advantage in the cases where relief was most particularly wanted. In that of the boy it seemed to have all the good effects I had formerly noticed; he got well or nearly so in a few days. The kinks left him entirely, and he seemed merely to labour under the symptoms of an ordinary cold. The fate of his sisters was very different, they both died. The eldest is the subject of case fourth; the youngest died at a time when my mind was so much occupied at home, that no attempt was made to have her body opened.

All that passed on this occasion tended merely to confirm the opinion I had so long entertained, namely, that it might hasten the cure,

where no treatment was necessary; but when the disease was severe, it did no good.

The sudden and unexpected death of my son, gave a new turn to my thoughts. I reflected very much that I had not tried the fumigation, especially as it had been so decidedly beneficial on the former occasion. I began now to view the subject rather in a different light. I had seen that it failed when the disease was severe and far advanced; but I had also the most convincing proofs of its efficacy when early employed, or indeed at any stage of the disease, while the case continued mild. I saw then most distinctly, that the fumigation was rather to be regarded as a preventive, than a cure of bad symptoms. I had never seen it applied in a mild case where it did not do good; and I had never seen it applied in a bad case, where it had been of any service. But I began to reflect, that in every case, there is perhaps a short period after the formation of the kinks, when all the symptoms are mild, and when in all probability, the remedy ought to be applied.

My daughter's complaints were now too far advanced to expect any advantage from it in her case, but I resolved to try it in those of the

two youngest. But here, I must remark, that the disease had also gained very considerable ground. The kinks had been well formed for three weeks, and in both cases there was more or less fever.

The process was begun and continued for a little more than two weeks, and I may say, if not with advantage, at least with no aggravation of symptoms. About the end of this time, however, the oldest becoming suddenly more feverish and breathless, the process was given up. She was then bled three times, as I have already stated, the youngest was also bled with a leech, and both very soon got well. I lay little stress on these cases either for or against the practice: I always considered them as too far advanced before the trial was made. Since that time, I have had no proper opportunity of repeating the experiment.

I shall now shortly describe the process or the manner in which the fumes are applied, and the effects they generally produce on the patient. I shall then endeavour to ascertain the circumstances in which the process may be resorted to with a probability of success. and those in which it is likely to fail, or to do harm.

This method of treatment is very simple. About a quart of tar is placed in the middle of a small room. This is stirred round with a succession of red hot pokers till the fumes fill the apartment like a pretty thick fog. It is difficult to fix the criterion for this part of the process. I have generally made it so strong as to feel somewhat disagreeable to the lungs, but not more than I could bear without much difficulty for an hour. It very soon begins to affect the mucous membrane of the nose, and, however sound the lungs may be, to excite some degree of coughing. This is chiefly the case at first, after some time it becomes much more easy. I have never found the least uneasiness from it afterwards, and some have remarked, that it had a good effect on them when they happened to be labouring under a cold at the time.

The same quantity of tar will serve several times, but if used too long, the fumes become much more acrid and disagreeable. Besides the tar in this state, becomes very inflammable, is apt to catch fire on being touched with the hot poker, and cannot easily be extinguished.

When children are brought in, they generally begin to cry and cough pretty severely. During

this the quantity of mucus they discharge is often very considerable, and many of them vomit freely. In the two cases I have just mentioned, after some of the first fumigations, the quantity of mucus coughed up was so great that many parts of the floor were completely smeared over with it. At first sight it appeared to be little else than water; but on laying hold of it, it was found to be very tenacious, and in almost every respect similar to the white of an egg. Each of the children discharged from one to three or four ounces of this fluid. After this they became much more easy and composed, and were very apt to fall asleep, and continue sleeping for the rest of the time.

When I treated the children in 1805, I kept them in for an hour, and repeated the process every second day. This was the plan followed by Mr King. In the present instance I repeated it every day, and kept them in for the same length of time; but I did it in a larger apartment, and did not raise the vapour to the same degree of strength. I think this an improvement, at least the using a room of larger size. My principal reason, however, for this modification was,

that I considered the disease as too far advanced, and was afraid of doing harm.

After the children have got their sleep over, they are generally cheerful, and well for the rest of the day. The effect of the treatment is generally obvious after the third or fourth application, sometimes even after the first. The cough becomes more moist and easy, and if it does not go off entirely, it soon comes to resemble a common cold more than the Chincough. The younger children are, they bear the process the better, and its good effects are the sooner felt. In general children bear the vapour much better than the adults who have to attend them.

I had always remarked that children were the better, when they vomited freely during the time they were exposed. The two last patients not shewing much disposition that way, I twice or thrice gave them an emetic each, a few minutes before they were taken in. These always operated well, and seemed to give them additional relief.

I have said the fumigations, in the present cases, were continued daily, this however, was only for the first five or six days, after that they were employed every second day, and it

was uniformly remarked by all the attendants, that on the evening after this was done, the children were more lively and cheerful than at any other time, and rested much better that night, than the night following.

With regard to the proper time for applying the remedy, my experience has not been sufficiently extensive to speak with confidence. I shall shortly notice, however, the few observations I have made on that head. I believe it is a matter of no consequence, whether it be soon or late in the disease, provided that little or no fever has come on. If the child be in a high fever, and have much difficulty of breathing, it will do no good, on the contrary it may even do harm. As I have already remarked, it is rather to be regarded as a preventive, than a cure of the bad symptoms.

But I imagine there is in almost every case, a period of from one to three weeks, after the kinks are formed, before that any considerable degree of fever commences. This is the period, when the fumigation should be adopted, and where, so far as my experience goes, it will always be successful.

At one time the presence or absence of the

symptoms of fever were the only circumstances I could fix on, to say when the practice might and when it might not be tried. But as we now know something more of the nature and stages of the disease, we may perhaps be able to speak with a little more precision.

It is obvious, after tubercles are formed, that no good is to be derived from this, or perhaps from any treatment. Now I believe, the cases in which it has entirely failed, were chiefly cases of this kind. They were all cases of some standing, where many other remedies as well as fumigation had been tried in vain.

After the inflammation has spread to the substance of the lungs, and also affected the pleura, no advantage can reasonably be expected from any treatment which has not a direct tendency to counteract that affection. And if the disease has proceeded so far as to have induced an abscess, the case becomes in every point of view more and more incurable.—Here then are other circumstances besides tubercles, in which the fumigation may have been improperly employed:

When the inflammation of the mucous membrane has proceeded so far as to have induced the excessive secretion of mucus, which was

met with in the first and second cases, fumigation I suspect will also be unavailing.—It is obvious then, from these considerations, that in almost all the severe cases of Chincough, there are circumstances, which preclude even the shadow of hope from this remedy, or perhaps from any other.

If we observe the early stages of the disease; here there is generally a deficiency of natural mucus in the trachea and bronchiæ, and in proportion to this deficiency of the natural mucus, the inflammation is apt to run to an extreme, either in the membrane itself, or in the parts adjacent. The great purpose then, which I think the early application of the fumes of tar is likely to serve, is to preserve this secretion where it is, and to restore it where it is not. It is in this manner only that it can act in preventing and relieving the inflammatory symptoms. I suspect, however, that its power of removing any considerable degree of inflammation, when it has taken place, is but small; on the contrary, in such cases I am afraid that it may as readily do harm as good.

It may be supposed to act as a sort of stimulus on the membrane, and remove a slight de-

gree of inflammation, as a stimulus applied to the eye removes a slight ophthalmia; but the same application to that disease in a more severe or advanced state would aggravate every symptom. I might advance a variety of other analogous facts to prove the same thing, but I conceive it to be unnecessary.

I have often thought that besides the vapours of tar, a variety of other substances might be applied in the same manner. I have tried, but not in a very general way, the oil of turpentine, and I have thought that it was really serviceable. It can easily be done by placing a cup containing it on a heated brick or piece of metal; or it may be placed in a quantity of warm water. These precautions are necessary from the vapours being so excessively inflammable.

This is a much more cleanly process than that of the tar. It can be continued for any length of time, and can be modified to any degree of strength. Besides the pure vapour of the tar, there is always raised a good deal of smoke, dust, and other impurities, which certainly cannot contribute in any degree to the efficacy of the remedy. The vapour of Ether, and a variety of other gases might perhaps be employed in the same

way, they have often been found useful in Asthma, and in Peripneumonia notha; but this is speaking merely from conjecture.

PARTICULAR MEDICINES.

I SHALL under this head comprehend a variety of medicines, which from time to time have been proposed as remedies in Chincough. The manner in which some of them produce their effects is obvious enough; others seem to act in a more concealed and mysterious manner. In the present state of our knowledge, it would be absurd to reject a medicine, which has the sanction of experience, merely because we cannot see, or cannot explain, its operation on the human body. One thing, however, deserves particular attention in all cases; to ascertain if possible the circumstances in which the remedy is most likely to prove beneficial, and at all events, the circumstances in which it is likely to do harm.

OPIUM. I have already mentioned opium as a topical remedy very generally used, and perhaps very extensively applicable. As an internal remedy it requires a great deal more cau-

tion. If very liberally employed it suppresses the cough, allows the mucous to accumulate, obstructs the breathing, increases the fever, and in fact aggravates every symptom of the disease. This is still more particularly the case if previous evacuations have been neglected. Where the bowels are already in a loaded and torpid state, opiates invariably do harm. Some practitioners have supposed, that they may be given in such small doses as to compose the nervous system, and yet not interfere with the operation of other remedies. If this can be done the practice is less objectionable.

“ When we give only one, two or three drops of laudanum in a day,” says Dr Kirkland, “ without entirely suppressing the cough, it sufficiently lessens the irritability of the whole habit, and gives the patient relief by preventing the nerves from being so violently affected. Dr Hillary, says “ a little *syr. e mecon.* or *elix. paregoric*, joined with other medicines, seldom fails to render “ the disease more moderate, and in time takes it “ off.” The only deficiency I can see in the practice of physicians in general, is, that they have omitted to join very small doses of opium along

with the medicines they have given to remove the cause of the disease*.”

In another part of the same work the Dr goes on to remark, that “ The rule is to give as much laudanum as will lessen the cough, without suppressing of it entirely. One drop, I find, is commonly enough for the purpose, taken in the space of twenty four hours in a child of half a year old: two drops in one of a year old: three drops two or three years old: four drops four years old, &c. But it is not necessary to continue increasing the dose according to the age of the patient, a less quantity in proportion, being sufficient, which is probably owing to the very irritable state of young children†.”

To opium prescribed in this manner, judging from my own experience, I could see no manner of objection. After bleeding, a smart purgative, or after an emetic, a small opiate at bed time has often a very beneficial effect. If combined with an antimonial so as to determine to the skin, so much the better.

In a case which I attended some time ago, where the patient, a child of a year old, had a troublesome diarrhoea, she was much benefited by

* *Animadversions on a late Treatise on Kinkcough*, p. 46. † *ib.* p. 51.

giving her a dose of castor oil with a grain of calomel in the morning, which generally operated well through the day, and then a small clyster containing from five to ten drops of laudanum at bed time. This had the effect not only of quieting the bowels, but also of relieving the cough, and disposing the patient to rest. I have used the same thing with similar advantage in other cases, where there was no diarrhœa. Sometimes in place of the laudanum, I have employed the extract of hyociamus. When this last medicine and cicuta are useful in Chincough, I suspect it is chiefly by acting as anodynes.

When the disease is on the decline, I have found considerable advantage from the Edin. paregoric elixir combined with syrup and gum arabic, or some other bland pectoral. No remedy is better adapted to relieve the urgent symptoms, when the disease has become decidedly phthisical.

“Of antispasmodics,” says Dr Cullen, “the most certainly powerful is opium; and when there is no considerable fever or difficulty of breathing, present opium has often proved useful in moderating the Chincough; but I have not known it employed so as entirely to cure the disease*.”

* First Lines of the Practice of Physic, Sect. 1424.

PERUVIAN BARK. From the Chincough being generally regarded as a disease of debility, and from its being always more or less periodical in its paroxysms, this medicine, with some practitioners, has been regarded as a very necessary part of the treatment. Some indeed have trusted to it more than to almost any other, and particularly at certain periods of the disease.

Dr Cullen considered Chincough as consisting of two stages; in the first of these he recommended evacuations and all the other parts of the antiphlogistic regimen; in the last, he supposed the disease was chiefly continued by the power of habit, and that then a very different mode of treatment became necessary. In this stage he placed his chief reliance on tonics and antispasmodics. He said he had no experience of the cup-moss, formerly so much celebrated in this disease, or of the bark of the misletoe; he always trusted to the peruvian bark. "I consider this medicine, as the most certain means of curing the disease in its second stage, and where there has been little fever present, and a sufficient quantity of the bark has been given, it has seldom failed of soon putting an end to the disease*."

* First Lines of the Practice of Physic, Sect. 1425.

Almost all the authors who have written on this subject, give a variety of cautions respecting the use of the bark, particularly the use of it at an early period of the disease. Dr Millar remarks, that “if the patient is much reduced by the long continuance of the disease, and hectic symptoms are observed, the peruvian bark may be given with great advantage; but as it is a powerful medicine, and not equally suited to all cases and constitutions, some caution is necessary in the direction of it. If the lungs have not been sufficiently cleared of phlegm, and the stomach and bowels of acidity, it will be necessary to prescribe a vomit, and some doses of magnesia and rhubarb before the bark is administered. If he labours under a hectic or remitting fever, the bark should be given during the remissions. If any obstruction in the lungs is suspected, blisters should be applied, and a seton or issue inserted previous to the use of the bark. When obstructions are already formed, the bark cannot be used with safety, till the resolution of these is attempted by gentle deobstruent medicines*.”

Dr. Sims found that after the disease had been mostly subdued by vomits and other remedies,

* Observations on the Asthma and on the Hooping Cough, p. 137.

the peruvian bark, the cold bath, and strengtheners, became requisite, together with frequent exercise, particularly on horseback.

On the whole I may observe, that the peruvian bark is a remedy which may be resorted to with great advantage, in the conclusion of the disease, when all the inflammatory symptoms have been previously subdued by other means, or where they have been naturally very mild. In other circumstances it is not only a doubtful, but a dangerous remedy.

The giving the bark in substance is the best, but as the patients are generally young, and not very easily persuaded to take it in that form, it may be given in tincture, in infusion, in extract; or failing all these, it may be exhibited in the form of clyster. For the latter purpose, a solution of the extract does very well.

CANTHARIDES. The topical use of cantharides, in various forms, has already been mentioned; but we have also a very flattering account of its utility as an internal remedy. In 1738, Dr Burton of York, published an Essay on Chincough, at the end of his treatise on the Non-naturals. In this work he remarks, that he “ordered a scruple of cantharides and as much

camphor, to be well mixed with three drams of the extract of bark, of which mixture I gave the children eight or ten grains every third or fourth hour, according to the circumstances of the cases, in a spoonful of some simple water or julap, in which I have dissolved a little balsam of capivi; the children's drink was emulsio communis or the like. By following this method I performed the cures very soon, some in five or six days."

This method Dr Burton adopted after having tried the bark alone, in the same circumstances, without effect. He was led to the use of cantharides by some peculiar theoretical notions, which it is unnecessary to notice.

Soon after this publication, the Chincough became frequent in the neighbourhood of Settle in Yorkshire, and engaged the attention of a Mr Sutcliff a surgeon apothecary in that town. He found the medicine as prescribed by Dr Burton to be useful, but extremely disagreeable to children, who are the usual victims of this disease. This induced him to adopt the following formula. In this state the medicine, was easier taken, while its effects continued nearly the same.

R. Tinct. Cort. Peruv. Sescunciam. Elix, Pa-

regoric Semi-unciam. Tinct. Cantharid. drachmam. M.

This was given in small doses three or four times a day, which were gradually increased till a slight strangury was excited; and then the dose was diminished, or taken at more distant intervals. The strangury usually came on about the third day; and the hooping seldom continued above six days from the first exhibition of the medicine. Though it sometimes succeeded without exciting any strangury, it generally produced its salutary effects sooner, when that circumstance came on, whether the bark was joined with the cantharides or not.

“During twenty years,” says Dr Lettsom, “this ingenious practitioner has almost uniformly continued to use the medicine, with the most flattering success; under his tutelage I was a witness of it; and from numerous instances which have since occurred to me, I have seen no reason to interdict its use *.”

Dr Lettsom being desirous to know of Mr Sutcliff, if his more mature experience still led him to place the same confidence in the remedy,

* Medical Memoirs of the London Dispensary, p. 256.

wrote certain queries to him respecting the Hooping cough, and received the following answers.

“ Does the composition of bark, cantharides, and paregoric elixir cure the Hooping cough, when no strangury is excited? Or has strangury any salutary effects in removing this disease?—Gum arabic has been sometimes given to prevent strangury, and yet the medicine cures. I consider the strangury, where nothing is given to prevent it, as the criterion that the blood is sufficiently stored with the particles of cantharides.—Has any injurious effect been excited by this internal use of cantharides? I never knew any bad or permanent effects whatever.—Do the cantharides sometimes prove cantharitic? I recollect no instance of that effect.—How soon does the Hooping cough cease after taking the remedy? The hooping generally ceases in three or four days, from the first exhibition of the medicine. Sometimes the paroxysm returns only once after the first dose; but an expectorating cough generally continues for a week or two afterwards.”—He concludes by remarking, “ I never yet saw an unsuccessful event after using the composition of bark, cantharides, &c. having never lost a patient in the Hooping cough *.”

* Medical Memoirs of the London Dispensary, p. 266, &c.

Dr Lettsom bears ample testimony to the credibility of his friend Mr Sutcliff, and assures us, that the remedy has been attended with similar success in his own practice.

About ten years ago Professor Hufeland drew the attention of the profession to the same remedy. He states that he found the *tinctura cantharidum* a most excellent remedy in obstinate cases of Hooping cough. He thought it particularly indicated where the disease was of a more chronic character attended with atony. It was given in mucilaginous and bitter remedies, or sometimes with bark, in doses of from three to eight drops four times a day; but in some cases it was necessary to increase the dose by degrees, till a slight burning sensation in making water was perceived. He likewise found it of great use when united with opium, the effect of which was much increased by this combination †.

I can say little of this remedy from experience. It seems to be chiefly useful in cases where the disease is characterised by its tediousness, rather than by its violence. In the little I have seen of it, it appeared to act as an expectorant, but it

† I have not seen the original account of Professor Hufeland, the above is taken from the xi. vol. of the Medical and Physical Journal.

probably affects the other secretions in a similar manner. When the disease has ended in real Pneumonia, or in the formation of tubercles, I should think it a doubtful, if not a dangerous remedy.

ASSAFŒTIDA. Dr Millar had found this to be a useful remedy in Asthma, and reasoning from analogy, he concluded it might also be beneficial in Chincough. He tried the experiment, and finding his conjectures well founded, he published an account of his practice in 1769, in an appendix to his work on Asthma.

“ When it was prescribed early,” “ says the Dr, “ other medicines were seldom necessary, the patient, while using it, was generally cool, free from thirst or any other febrile symptom, and easy between the fits of coughing, which were moderate, and attended with a discharge of phlegm, by which an accumulation of viscid humours in the stomach and lungs was prevented, the appetite preserved, and all the excretions duly maintained.

“ A dram and a half, or two drams, dissolved in six or eight ounces of pennyroyal water, was given every day, but the dose was increased or diminished, according to the strength, age and con-

stitution of the patient." The following is an example of the success of this method of treatment.

" Last year when the Hooping cough was epidemic, and so malignant that in some families three or four children died, this medicine had so good an effect, that none (so far as I know) who took it from the beginning of the disease, were even for one day confined by sickness. In one family consisting of five children, of whom the eldest was seven, and the youngest two years old, it was prescribed upon the first appearance of the disease; an ounce of it was dissolved in a quart bottle of pennyroyal water, and this quantity was generally used every day; the children were so fond of it, that they often begged to have more than was prescribed for them. No other medicine was given through the whole course of the disease, excepting a dose of rhubarb and magnesia occasionally, and in two of the children, in whom the breathing was a little affected, a blister was applied and an issue was opened between the shoulders; they all got easily over the disease, which was of shorter duration than usual, and so mild that they conti-

nued through the whole course of it, as cheerful and playful as in perfect health.”

Such is the account which the Dr gives of the effects of assafoetida in Chincough. But though no doubt partial to his favourite remedy, he does not appear by any means to have been blind to its defects. Even in the mildest cases, he did not trust to it alone, and in the more severe, he deemed it altogether inadmissible. Hence he goes on to remark,

“ But though assafoetida has been given with remarkable success, in the early stage of Hooping cough, yet I never ventured to prescribe it in the advanced state, or when the disease was accompanied with a hectic fever, hæmorrhage or phthisical symptoms. It is not therefore to be imagined that no other remedy is at any time necessary, for as the management must always depend on particular circumstances, no invariable rule can be laid down; thus on some occasions, emetics, blisters, issues and setons, and on others astringent medicines may be indicated.”

He then goes on to enumerate these particular conditions, in which he thinks assafoetida inadmissible. When the breathing is oppressed, when the stomach and lungs are loaded with

phlegm, and when the patient is reduced by hectic, or the long continuance of the disease; in these circumstances he advises the practitioner to have recourse to the ordinary remedies.

On the whole, even from Dr Millar's own account, assafoetida is only to be regarded as a remedy in Chincough when the disease is mild, and when perhaps little or no treatment is necessary. The Dr speaks of it as being very agreeable to the patients; in this respect, my experience differs from his very widely; indeed I have found this an almost insuperable objection to it, and the same thing has been frequently mentioned by other practitioners.

HEMLOCK. I have never seen much advantage from this medicine, in any form or in any disease. It was first proposed as a remedy in Chincough by Dr Butter, who wrote an extensive treatise, for the express purpose of recommending it. This work was published in 1773, and coming from rather a respectable quarter, excited a good deal of attention. It was more calculated, however, to impose on the general reader, than on persons more conversant with medical subjects. One thing must have struck every reader as being excessively

absurd. In stating his indications of cure, the Dr mentions, that in Chincough, “there is only ONE, namely, to give hemlock.” And what rendered his character still more suspicious, this hemlock, prepared in a very particular manner, was vended in sealed pots, and designated, “An agreeable, certain and expeditious cure for the Kinkcough.”

After this account of the matter, it will not be expected that I shall take up much time in discussing the merits of hemlock. Dr Butter gives twenty cases in which this remedy was employed; but even in these, its beneficial effects are by no means very apparent. He afterwards goes on to remark, that whether the disease be simple, or whether it be complicated with worms, dysentery, dentition, ague, small pox or measles, the treatment is in all cases very nearly the same. Hemlock is still the remedy on which the practitioner is to place his entire confidence.

Dr Butter used this plant in a variety of forms, but the one to which he gave the preference was the extract, or what he commonly terms the hemlock mass. To a child under six months, he gave half a grain of this extract dissolved in one ounce of spring water properly sweetened. For

a child from six months to two years, the mixture was to consist of one grain diffused in one ounce and a half of water. For a patient from two to four years, two grains in two ounces of water. He proceeded in this manner, allowing half a grain more for every year of the patient's age, till he was twenty. These doses were given daily, and increased according to circumstances. If the patients disliked the medicine in a liquid form, they might take it in powders, boluses or pills.

The effects of this remedy are as follows. "The kink daily abates in force and frequency, and is generally removed, together with all its concomitant symptoms, except a slight cough, in the space of a week; and this is often the case even in some instances of complication with other diseases, as dentition, or worms. Thus hemlock is a specific in Kinkcough, according to the most proper interpretation of that word; for it acts on all the symptoms at once, or rather on the proximate cause; and so by diminishing the irritation, all the symptoms must of course diminish in the same proportion, till at length they are entirely removed, that is, till the disease is cured*."

* Butter's Treatise on the Kinkcough, p. 181.

Dr Armstrong speaks of *cicuta* as a remedy in which he had some confidence. He remarks, that “though he has not found it so effectual as Dr Butter represents it, yet in many cases it seemed to shorten the disease. “When I have inquired of the parents,” says he, “how it agreed with the children? the answer has almost constantly been, *very well*. As a farther proof of its being of service in this complaint, many instances have occurred, where, from the negligence of the parents, or their living at a great distance, the medicine has been exhausted for a few days, and during that time the cough was more violent, but on having a fresh supply it soon subsided*.”

“Narcotic medicines given internally,” says Dr Hamilton, “such as the hemlock and henbane, are sometimes useful in lessening the violence and frequency of the hooping, and are much preferable to any preparation of opium†.”

From what I have seen of this medicine, not only in Chincough, but in other diseases, I am disposed to conclude, that where it proves serviceable, it is chiefly by acting as an anodyne; and I am very far from agreeing with Dr Hamil-

* Account of the Diseases most incident to Children, p. 106.

† Hints for the Treatment of the Principal Diseases of Children, p. 172.

ton, that its anodyne powers are preferable to those of opium.

CASTOR. In the year 1767, Dr Morris, physician to the Westminster Hospital, published a paper in the third volume of the Medical Observations and Inquiries, recommending the use of castor and peruvian bark in the cure of Chin-cough. The Doctor proceeded on the idea, that the disease was partly of the nature of an intermittent fever, and partly nervous and spasmodic. The remedy he proposed was therefore to serve both purposes. "Accordingly," says he, "I gave eight grains of castor, and fifteen grains of the peruvian bark powdered with three spoonfuls of simple alexiterial water to each of my three children every four hours; in about four days the hooping and retching was considerably abated, and in a few days more entirely subdued in the two youngest; the eldest did not get rid of the hooping perfectly for near a fortnight, but the intervals were vastly longer, and the hoopings but trifling without any retchings, in less than a week. The cough continued some time longer, but was reduced to the effects of a common cold."

The Dr gives other two cases in which the

remedy was equally beneficial. I do not find, however, that it has ever been generally adopted. Dr Cullen makes the following short remark on the subject, "Castor has been particularly recommended by Dr Morris, but in many trials, we have not found it effectual." On this head I can say nothing from experience.

MUSK. I am uncertain how long this medicine has been employed in the treatment of Cough. It has been chiefly prescribed on the idea of spasm. "But whether it be from our not having it of a genuine kind," says Dr Cullen, "or not employing it in sufficiently large doses, I cannot determine; but we have not found it commonly successful.*"

Mr Hayes, after speaking of castor, cup-moss and millipedes, remarks, that "Musk is a pleasanter remedy than any I have yet mentioned, and perhaps not at all inferior to any as an antispasmodic; where there is much convulsion with the cough, from ten grains to a scruple or half a dram ground with sugar, should be given three or four times a day, if you expect real benefit from it. Given in large doses it is a powerful drug."

ARTIFICIAL MUSK. Professor Hufeland an

* First Lines of the Practice of Physic, Sect. 1424.

eminent practitioner of Jena, strongly recommends the use of musk, particularly the preparation, which has been termed artificial musk. This remedy though invented many years ago by the celebrated chemist Margraf, and sanctioned by the high authorities of Van Swieten and Stoeller, has never been much employed in this country.

According to Dr Hufeland's experience, the artificial musk has been found of eminent service in the Chincough, and in various other nervous diseases. This substance, he remarks, is most conveniently administered in the form of an emulsion. For this purpose from ten to twelve grains is triturated in a mortar with a few almonds and diluted with five or six ounces of water. Of this mixture two tea spoonfuls are given every two hours to a child from one to two years of age, and a rising proportion to older children. It generally produced a sudorific effect, while it obviously diminished or alleviated the fits of coughing; and not unfrequently it was attended with eruptions, which in many instances assumed the form of the true nettle rash, and by this favourable crisis soon terminated the disease.

The same remedy was prescribed with success

in the form of tincture by Mr Bartly of Bradford. He dissolved two drams of the resinous extract in eight ounces of alcohol, which formed a tincture of a palish yellow colour. Of this he gave from ten to twelve drops to a patient of six or eight years, three times a day, in a cupful of barley water. The effects were decidedly beneficial in the course of a few days*. Dr Bellamy of Preston tried the same remedy, and found it beneficial in a very hopeless case. The patient was his own infant daughter. She had been under the disease about six weeks, and had previously used a variety of other remedies to no purposed†.

About the time these cases were published in the Medical and Physical Journal, I prepared a quantity of the artificial musk, which consists of nitric acid and oil of amber, and tried it in two or three cases, but so far as I now recollect, not with any very decided advantage. According to Dr Hufeland's account, it seems to act chiefly by determining to the skin.

OIL OF AMBER itself, has been recommended by some authors as very useful in Chincough. Dr Underwood after having mentioned it as a to-

* See Medical and Physical Journal, vol. iv. p. 235. and v. p. 137.

† ib vol. viii. p. 41.

pical remedy, adds, that “when the spasms are exceedingly urgent, this oil is very useful when administered internally; and children of three or four years old, will take a few drops of it very well, mixed in a spoon with a little Lisbon sugar, from which I have seen as evident advantages as from any medicine whatever §.”

CAMPHOR has long been regarded as a remedy in Chincough. It has not often been prescribed by itself, but we frequently find it combined with other medicines. I should suppose that wherever castor, musk, cicuta and assafoetida are useful, camphor may be safely and beneficially employed.

Where the inflammation is mild in the beginning, but still more particularly in the end of the disease, I have found the London paregoric elixir a very useful remedy; but whether its beneficial effects are to be attributed to the opium, the benzoin, or the camphor; or to a combination of these with the other ingredients, is uncertain. It acts as an anodyne, promotes a diaphoresis, and generally aids the expectoration; but where children can be prevailed on to take the ammoniated tincture of opium, I have generally found it a more effectual remedy.

§ Treatise on the Diseases of Children, vol. i. p. 306.

The camphor being so very volatile, it is more than probable that some of its good effects may depend on the particles coming in contact with the diseased membrane itself. With this view it might be worth while to try the effects of an atmosphere, strongly impregnated with the efflu-
vium of camphor.

CUP-MOSS. This plant is mentioned by Willis, as a specific in Chincough, and has been occasionally noticed by other authors since his time. It was generally used in the form of decoction. It does not appear from the accounts which have been published, what effects it produced on the system, and I have had no experience of it myself. “Cup-moss,” Mr Hayes remarks, “is a common remedy in the hands of old women, and does service very often; its virtues are very similar to the bark, only weaker.”

DEADLY NIGHTSHADE. About thirty years ago, the root of this plant was proposed as a remedy in Chincough, by Dr Buchhave of Copenhagen. He dried the roots, reduced them to a very fine powder, and prescribed them combined with sugar. He found this remedy bene-

ficial in a variety of nervous diseases, but particularly in Chincough.

Its effects on the system seems to have been of the violent kind, such as great heat and flushing of the face, in some instances delirium, and in one case he speaks of its producing a sort of temporary insanity. These symptoms, however, soon subsided, the patient generally fell into a profuse sweat, and afterwards found himself much relieved. The medicine was taken morning and evening, in doses of about two grains to a child of five or six years of age, and a cure was generally accomplished in from one to two weeks.

Whether the deleterious nature of this plant, has deterred other practitioners from trying Dr Buchhave's practice, I cannot say; but it does not appear, at least in this country, to have gained much attention. I have had no experience of it myself*.

MEADOW NARCISSUS. In the year 1788, M. Dufresnoy, professor of Medicine and Botany at Valenciennes, published an account of the very

* The reader will find a more detailed account of Dr Buchhave's practice, with several cases, in the volume of Dr Duncan's Medical Commentaries for 1793.

extraordinary effects produced by this plant in various nervous and spasmodic diseases, and among the rest in Chincough. “ By its use,” says he, “ forty two children were cured of the Tussis Convulsiva, which was epidemic at Valenciennes, during the end of the year 1786. Four grains of the extract were dissolved in four ounces of syrup, and a table spoonful given to the children every third hour, by which means the cough gradually abated, and at last entirely left them *.”

About eight or ten years afterwards, M. Dufresnoy again published on the same subject, and seemed to be still more confident in the success of his new remedy, particularly with regard to Chincough. He now directs the medicine to be given in the form of syrup, and in doses of from half a dram to half an ounce. The syrup is to be prepared by boiling four ounces of the dried flowers, for five or six minutes in a pound of water, to which was added a pound of white sugar. The mixture was then clarified with whites of eggs, strained and evaporated to the consistence of syrup. Its action was that of

* Duncan's Medical Commentaries for 1792, p. 120.

an extremely mild emetic, and it was always readily taken by the patients †.

MILLIPEDES. These have been recommended as a remedy in a great variety of diseases, and particularly in Chincough; but as they are mostly jumbled together with other medicines of more or less efficacy, it is difficult to say what merit they may have possessed. Mr Hayes observes that he has found them useful when infused in wine, but he thinks the juice obtained by bruising and straining is preferable. In ancient practice, this remedy seems to have been greatly over-rated; in modern practice, it is hardly if at all to be met with.

ALKALIES. It has been a very general opinion that the fluids of the body, and particularly the secretions, are in a highly vitiated state in Chincough; and from the smell of the matter discharged from the stomach and bowels, it has been conjectured that acidity chiefly prevails. This has led to particular modes of treatment, and especially to the use of alkalies and absorbents.

The fixed vegetable alkali, we are told, was first recommended in this disease by Dr Stutz,

† Duncan's Annals of Medicine for 1799, p. 182.

and communicated to the public through the medium of Hufeland's Journal. But Dr Memminger of Reutlingen is the first, who successfully tried it in Chincough, and the following is the mode he adopted. "In the beginning he gave every two or three days, one after another, *Syrup Ipecacuanha* of *de Lassone*, with *vin. antim. Huxham.* to be taken by tea spoonfuls till it had produced vomiting three or four times. He then prescribed according to the different ages of the children, from four to twelve grains of *Alkal. fix.* in *aq. Cinnam.* S. V. with *syrup. Cort. Aurant.* besides which he ordered *Laud. liquid. Sydenh.* in a dose adapted to the different ages of the children. Warm baths, clysters, and the rubbing in of *Lin. Volat.* with *Tinct. Cantharid.* were used besides as auxiliary remedies. In the third stage of the disease the extract. chinae was given *."

In order to ascertain what was the effect of the alkali when in combination with laudanum, and when given by itself, he used it without employing any other remedy except a previous emetic, and he had the satisfaction to find that it proved very efficacious.

* Medical and Physical Journal, vol. ix. p. 176.

The carbonate of potash has been used, as a popular remedy in this country, for many years. It has generally been combined with cochineal and other articles; but if the prescription have any real efficacy, I should suppose that it must be attributed to the alkali it contains. Some years ago it was very generally used in this neighbourhood, and I have been often told with considerable success.

The prescription was as follows. Take one scruple of salt of tartar and ten grains of cochineal, rub them well together with a little loaf sugar, and then mix the whole with four ounces of water. Of this composition a tea spoonful was given three or four times a day to a very young child, and twice, thrice, or four times that quantity, to one farther advanced. This plan was continued till the disease began to abate, and after that in smaller quantities, till it was completely removed.

Dr Richard Pearson of London, has lately recommended the carbonate of soda as a useful remedy in this disease. "After the accumulation of phlegm has been brought away by an antimonial vomit," "says he, "I prescribe a medicine compounded of opium, ipecacuanha and prepar-

ed natron. To a child between one and two years old, I give this medicine in the following proportions, viz.: one drop of the tincture of opium, five drops of ipecacuanha wine, and two grains of prepared natron, made into a small draught with syrup and water, and repeated every fourth hour for several days; taking care to remove costiveness, whenever it occurs, by calomel and rhubarb. These draughts operate as an antispasmodic, producing at the same time some diaphoretic effect. Having stated the dose for an infant after the first year, it will be easy to apportion the quantity to other ages."

Dr Pearson concludes, "it is obvious that the ipecacuanha wine in the small doses above mentioned, is not intended to operate as an emetic. In what manner the fixed alkali proves serviceable I shall not at present hazard a conjecture; but I can assure the Society, that the same beneficial effects are not produced by opium and ipecacuanha alone.

"When, by the use of this medicine for some days, the paroxysms are rendered less frequent and less violent, the ipecacuanha wine is omitted, and a sufficient dose of the gum myrrh is substituted, the quantity of opiate tincture is di-

minished, while the proportion of alkaline salt remains the same. The gum myrrh I have found preferable in this disorder to the peruvian bark, especially in the instance of very young children. In the form of combination last mentioned, it proves sufficiently tonic, and at the same time has a tendency to prevent costiveness *."

But while Dr Pearson recommends this prescription as a useful remedy in Chincough, he does not do it to the exclusion of others. It is not to supersede the use of bleeding, blistering, and other anti-inflammatory measures, whenever the disorder is accompanied with evident Pneumonia and other aggravated symptoms.

ANTIMONIALS. In the year 1767 Dr Fothergill published a paper in the third volume of the Medical Observations and Inquiries, recommending a powder which he had found to be very useful in Chincough, and of which he gives the following account. "I have for some years," says he, "made use of the following antimonial medicine in the cure of this disease, and often with so much benefit to the patient and satisfaction to myself, as to induce me to mention it

* Transactions published by the Medical and Chirurgical Society of London, vol. i. p. 23.

casually to many of my physical acquaintance. From several of these I have received such favourable accounts of its success as to strengthen my own opinion, and to esteem it, though not a certain cure in all cases, yet perhaps as useful a medicine in this distemper as any we are acquainted with. The composition is as follows, *R. Pulv. e chel. Cancr. ʒss. Tartar emetic gr. ii. Accuratè misceantur.*—The testaceous powder in this case, is not particularly designed for any other use than that of making the emetic tartar divisible into very small doses, with precision, and without difficulty.”

One grain, one grain and a half, or two grains of this composition, was to be given in a little milk, to a child of a year old, between breakfast and dinner. If this did not excite vomiting, a larger dose was to be given next day at the same hour, and so on daily till the disease abated; then twice in three days, every second day, or twice a week according to circumstances, till it was wholly removed. Given in this manner the Dr meant it to act chiefly as a vomit, but partly also as a diaphoretic.

When the fever was considerable, particularly towards night, he prescribed it in a different man-

ner, and with a different intention. In these circumstances, at night, he prescribed half the former dose with a few grains of nitre, and the pulv. contrayerv. c. “this generally procures,” says he, “an agreeable diaphoresis, and takes off some part of that moisture, which might probably have otherwise increased the irritation and oppression of the lungs. In most cases, and in every stage of the disease, I have chiefly trusted to this process, seldom having occasion either to bleed or to use any other kind of evacuation, unless to procure a stool or two daily, if the medicine above mentioned fails in that respect. In this case a proper dose of magnesia, given at bedtime with the antimonial, seldom fails in answering our expectations.”

The Dr recommends that the powder be always accurately and recently prepared, as there is some chance of the tartar being robbed of its acid, by the absorbent powder.

A solution of the tartrite of antimony had previously been very strongly recommended by Dr Armstrong, in the first edition of his Essay on the Diseases of Children. In the second edition published in 1777, he makes the following remark. “The solution of tartar emetic I have

used in the Hooping cough, for upwards of thirteen years, with very good success."

The Dr seems to have prescribed this remedy with nearly the same views as Dr Fothergill, to act partly as a vomit, and partly as a diaphoretic. Of the first of these intentions, I have already treated sufficiently, under the head of emetics; as to the last, I cannot too strongly recommend it to the attention of practitioners. I believe that wherever specific medicines have done real service, it has been by promoting and improving the state of the cutaneous evacuation. This will be found more or less deranged in every case, and no remedy, with whatever view prescribed, will prove decidedly and permanently beneficial, unless it at the same time restore the natural and healthy functions of the skin.

When the more violent symptoms have been subdued by other appropriate treatment, I think I have often seen the skin rendered soft and perspirable, by a slight but long continued course of tartrate of antimony, with a very small proportion of the submuriate of mercury, or of the blue mercurial pill.

ACETITE OF LEAD. The sugar of lead is mentioned by Sauvage as a remedy in Chincough.

After enumerating a great variety of articles which may be employed, he goes on to observe, “*necnon saccharum saturni ad grana duo, tria*.*” But from this very imperfect statement, it is impossible to say to what extent the remedy had been employed, with what intentions it had been prescribed, or what effects it produced.

In 1807, Dr Reece of London made the following communication to the editor of the Medical and Chirurgical Review. “I am not aware,” says he, “that the acetate of lead has been ever employed, or suggested as a remedy for the Hooping cough; if it have, you will of course suppress this communication. The disease appearing in my own family with unusual violence, and resisting the common remedies, I resolved on giving the acetate of lead a trial, in consequence of having found it a most valuable medicine in abating the cough and quieting the hectic symptoms, attendant on phthisis pulmonalis. I commenced, by giving to a child of four years old a tea spoonful of the following mixture, every six hours. *R. Plumbi acetati gr. v Syr. violæ ʒij Aq. rosæ ʒij. M.* The cough being on the following day less frequent and violent,

* *Nosologia Methodica*, edit. Amstelodam. 1768, tom. i. p. 651.

and the stomach and bowels not deranged by the medicine, I directed the dose to be increased to two tea spoonfuls every six hours. After the first dose, the child was not heard to *hoop*, and after two days more, the cough entirely ceased. The child's health which for some time had been bad, was evidently improved by it.

“The result of this experiment induced me to give it to my youngest child, and several others in the neighbourhood, in which it proved so successful, that I really consider it a specific in those cases, and therefore am desirous to recommend it to the attention of practitioners. I attribute its salutary effects in these cases, to its power in diminishing excitability*.”

I have no experience of the efficacy of this medicine; but from its powerful effects in some diseases, and from its having been long known and occasionally used as a remedy in Chincough, I think it deserves a cautious trial.

A medical friend of mine in this city, tells me, that since Dr Reece published the preceding statement, he has prescribed it in a considerable number of cases, and with very obvious benefit.

ARSENICAL SOLUTION. Mr Simmons of Man-

* Medical and Chirurgical Review, vol. xv. p. xxxvii.

chester in a letter to Dr Duncan, published in his Annals for 1757, gives the following account of the benefit he derived from the use of arsenic in the treatment of Chincough.

“Assafoetida, peruvian bark, extract of hemlock, and other remedies celebrated in the Hooping cough, too often disappoint the expectations of the practitioner, and reliance is now placed chiefly on the exhibition of emetics, on country air, and a light diet. Even under this treatment the disease runs out to a considerable length, and often does much injury to the constitution. A remedy that has the power of subduing it in its early stage, will therefore prove a valuable acquisition to the healing art.

“For upwards of three years I have given arsenic in the Hooping cough with the most salutary effect. In general it has put a stop to the disease in about a fortnight; and it has never failed to moderate it in a few days. I have administered it in one unsuccessful case only, and even then it afforded considerable relief; and had I been called in earlier, or had I been permitted to pay the attention the case required, I am of opinion it would have succeeded in that also.

“I have used it in the form of the mineral so-

lution of Dr Fowler, and in the doses, and with the precautions recommended by him in his work on Intermittents, &c. Children of a year old may take it with safety. Previous to, and during its use, bleeding, blisters, and emetics, may be employed according to the indications, particularly the latter. It should be continued till the disease is subdued, and then leaving it off for a week, it should again be had recourse to for a week, to prevent its return. Should exposure to cold occasion a relapse, it has hitherto put a stop to it on being taken for a few days."

Mr Simmons concludes, that "under these precautions, and with these regulations, I apprehend it will generally be exhibited with success; and I recommend it with confidence to the profession *."

I have also no experience of this medicine in Chincough; but from its powerful effects in other diseases, and from the knowledge we now possess of conducting the use of it with safety to the patient, I think it deserves a trial. Mr Simmons observes, that all the other parts of the treatment, may, if they are indicated, be used at the same time.

* Duncan's Medical Annals, vol. ii. p. 393.

Dr Ferriar, who has paid great attention to the treatment of this disease, thinks that "the only remedy, which promises to shorten the disorder effectually, is the solution of white arsenic. I have employed this medicine in several cases of Infirmary patients, with tolerable success; and I have occasionally given it in private practice, with so much advantage, that I think it deserving of further trial. The dose with which I generally begin is one drop daily, for an infant; and for children under seven, two drops, repeated according to the state of the symptoms. It requires some caution to avoid the accumulated action of this medicine. The exhibition of the solution should be suspended occasionally, for a day or more, and the bowels should be gently opened by means of a little calomel*."

DIGITALIS has been mentioned by a number of authors, as a very useful remedy in this disease. I have not had much experience of it in Chincough myself, but reasoning from analogy, and from the reports of some of my medical friends, I have every reason to think that in certain circumstances it may prove beneficial.

* Medical Histories and Reflections, vol. iii. p. 221.

When there is much fever it may tend to moderate the violence of arterial action; when the secretion in the bronchiæ and air cells is too great, it may tend to restrain it, or produce absorption; and lastly, from its well known effects in dropsies of the chest, no medicine is likely to prove of equal efficacy in those cases, where effusion into the pericardium has taken place, which, from the dissections I have made, appears to be a very common consequence of Chincough.

I have generally found great advantage from a combination of equal parts of digitalis, calomel and squills, made into very small pills, in the catarrhal or bronchial inflammation, which succeeds to Measles and to Scarlet Fever; and also in the hydropic affections of the chest and other parts of the body, so common, particularly in the last of these. I have tried the digitalis by itself in similar circumstances, but not by any means with the same success. If there be evident signs of plethora, previous bleeding makes the medicine act much more kindly, and at the same time much more powerfully on the system.

NITRAT OF SILVER. This is one of the latest remedies, which have been proposed for Chincough. I am not aware of its having been sug-

gested before 1806, when Mr Jones of Hall, Montgomeryshire, published the following short account of it, in the sixteenth volume of the Medical and Physical Journal.

“ Having experienced,” says he, “ much vexation and disappointment in the employment of all the usual remedies for Hooping cough, I was induced, by the very powerful effects of the nitrat of silver, in diseases somewhat analogous, to make trial of it; the first instances in which I used it, justified a perseverance, and I can now, from pretty extensive experience assert, that it possesses, at least equal efficacy to any other medicine hitherto recommended in that troublesome disorder. I have always given it in the form of pill, made up with the smallest possible quantity of bread crumb, in which state, from the very minute size of the pills, it possesses the advantage of being easily concealed in a little jelly, or any substance of a similar nature, which a child can be prevailed upon to take.”

This is all the account Mr Jones gave, and I do not recollect of having met with any thing on the subject since. I should have been glad had he been a little more explicit as to the doses, the times of taking the medicine, and the effects

it produced. This would have enabled other practitioners to repeat the practice, with a greater probability of success.

ELDER BARK. The medicines I have mentioned hitherto, were prescribed with a view to cure the disease; the present prescription is employed as a preventive. I would hardly have ventured to introduce the subject, had not the gentleman who gave me the following account of the method of preparing and using the medicine, assured me, that in a very considerable number of cases, he had tried it himself, and always with success. He had prescribed it in a variety of instances, where he thought, that in all probability, if nothing had been done, the children must have been affected. He added too, that the information which led him first to try it, though not from a medical source, was from a very respectable quarter.

“ A large handful of the inner bark of elder (*Sambucus niger*) is to be boiled for an hour or longer on a gentle fire in a quart of sweet milk. It is then to be strained, and the decoction is to be slowly evaporated till it is of the consistence of honey, sugar is then to be added, to give it consistence for making pills; of which, accord-

ing to the age, pills may be made from the size of large pepper corns, to that of the largest peas. Nine of these pills are considered a proper quantity for one person, to be taken in three mornings, that is, three every morning fasting.— If already affected with the chincough, they do no good.—The only sensible operation observed from their exhibition, is that of a gentle laxative.”

BESIDES the medicines I have mentioned, various others have been recommended in Chincough; but their origin has been so obscure, and their merit so doubtful, that I have thought it unnecessary to take any notice of them. Perhaps it may be thought I have dwelt too long on this subject already; but as I mentioned before, it has been my wish, that this work should contain, not merely what I have seen and experienced myself, but the substance of all that has been written on the subject by others.

REGIMEN AND DIET.

THESE are the only parts of the treatment which remain to be considered; but as they are very important, I shall subjoin a few remarks under each of the following heads.

LODGING. From the disease being always more mild in warm than in cold seasons of the year, it is reasonable to suppose that the patient's apartment should be of a moderately high temperature; and this I am persuaded might often be of service, could it be uniformly preserved. But a patient once accustomed to a high temperature, suffers from the least exposure to cold, and thus runs a greater risk than if his apartment was more free and airy. The great object is a moderate and regular degree of heat, with an abundant supply of dry temperate air.

I have often seen patients much relieved by taking them from a nursery below stairs, to a more elevated part of the house, and also by taking them out of a confined ill ventilated bed room into a room more spacious and better aired. Such changes are peculiarly beneficial in reducing the degree of fever, and if they are conduct-

ed with caution, they may be accomplished without increasing either the catarrhal or inflammatory symptoms.

In the colder seasons, when children are to be taken abroad, it should not be done too suddenly. If their room has been warm, they should first retire to a cooler, and from that perhaps to a third still colder, before they expose themselves to the open air. In returning from an airing the same gradations should be observed.

There is nothing more common, and certainly nothing more pernicious, than the practice of running to the fire to warm a child as soon as he enters the door. If he is very cold the greater is the reason for exposing him cautiously and gradually to the heat. If the extremities or any other part of the body be very cold, some degree of heat should first be excited, by chaffing and rubbing, before exposing them to the fire. Or if the child be capable of walking, he should be made to walk, or run up and down the room for some time, so as to excite the natural heat of the body. Much health is lost, by not observing regulations of this kind at all times.

CLOTHING. As much depends on the state of the skin in this as well as in most other diseases.

es, the patient's clothing should be particularly attended to. Flannel next the skin, especially in the colder seasons of the year, is very necessary. It prevents those sudden chills, to which the body in a febrile state is so peculiarly exposed, when the temperature of the atmosphere is variable.

Besides flannel next the skin, the other parts of the patient's dress should be warm and comfortable, and particularly that of the extremities. I think I have often seen much mischief in this country, from the too common practice of allowing children to run about with their bare feet in cold damp weather. Some of the worst cases of Chincough I have met with, occurred after exposures of this kind; and I have no doubt of its proving a very frequent cause of mortality among the poorer classes of the community.

The health of patients is often injured by cold uncomfortable beds, as well as by their being too close and warm. As children are apt to throw the clothes off themselves in their sleep, and often when they are in a state of perspiration, it becomes a necessary part of the nurse's duty to attend to this circumstance. But as no attention can guard against

every accident, the sleeping with proper night gowns is a very necessary precaution.

I have generally found the patients benefited by applying more or less flannel round the neck, and I have often seen a ply or two over the chest of considerable service. These precautions are peculiarly necessary on the patient's going from a warm room, into the open air. As patients are generally carried abroad, or transported from one place to another, without any muscular exertion of their own, the heat of the body must be preserved by an increase in the quantity of clothes; the lighter and warmer these are the better.

BATHING. We have seen that convulsions very frequently occur in Chincough. In these circumstances the speediest and surest method of relieving the patient, is to put him into a warm bath. When there is reason to apprehend such an occurrence, the means of preparing a warm bath, should always be in readiness. The delay of a few minutes may prove fatal to the patient.

As much depends on the healthy functions of the skin, even in ordinary cases, I have found an occasional warm bath of considerable service:

The kinks for the most part abate for a time, and the patient generally sleeps better for the night. If the warm bath be employed, it should only be once or at most twice in the week. When used oftener, it disposes the patient to catch cold, and increases the debility. The tepid bath may be used more frequently, and does not require the same precautions before and after.

From the high degree of temperature which can be employed by the vapour bath, I should think it a very excellent remedy in those cases where the disease becomes so suddenly severe and dangerous; but of this I have had no experience.

From the benefit derived from certain topical applications, I think it reasonable to suppose, that medicated baths may prove very seasonable. In this way the medicine can be applied to the body by making a solution or infusion of it in the water employed, or, if it be of a volatile nature, it may be applied in the form of vapour. I should think this last peculiarly well adapted; but both deserve a trial.

I have not found cold bathing admissible in the acute stages of the disease. Nor have I found it at all advantageous till the symptoms were nearly or wholly removed. After this, it proves use-

ful in restoring the patient to strength. I have known people, on going to the coast in the summer season, attempt to bathe their children while under the disease, but the general report I have received on those occasions was, that it did harm.

DIET. All authors agree, that patients in this disease, should be confined to a very light diet. The diet, however, must vary in the different stages, and according to the different circumstances of the case.

In the early stages of the disease, a light vegetable diet is in all cases the best. This accords with the sentiments and experience of almost every author who has written on the subject. Animal food, in a solid form at least, should be entirely excluded; and still more particularly salted, hung or smoked meat; salted or dried fish, and eggs and cheese. To these may be added the different kinds of pastry and other highly seasoned articles, and especially such as are baked with butter.

With regard to what children may take, I cannot do better than quote the following passage from Dr Armstrong. “ I chiefly allow sago and panada to children at the breast, or while they are very young. To such as are a little grown up,

about two years old and upwards, besides the above mentioned, bread pudding, apple pudding, or dumpling during the season; stale French roll with honey, current jelly, or raspberry jam; apples boiled, roasted or baked; but no pye crust of any sort, nor any jelly of meat or hartshorn.

“ Turnips, if they are good, well boiled and mashed with milk instead of butter, and likewise potatoes dressed in the same manner. But the meally sort is the best, and they ought to be carefully picked and tasted before they are mashed; because it is no unusual thing to meet with potatoes that look very well, but when you come to taste them, they have a most disagreeable flavour, and are very unwholesome.

“ Bread and milk I have no objections to, where there is not much fever, if the child is fond of it, and it used to agree when in health. But to make it digest the more easily, a little Spanish soap should be dissolved in it*, adding a sufficient quantity of sugar to take off the disagreeable taste of the soap.

“ For drink, infusion of malt, or of apples in the season, barley water, baum tea, hyssop tea, or

* Dr A. recommends the bigness of a filbert to half a pint of milk. This may probably serve the same purpose as the alkalies found so beneficial in some cases.

that of horehound, if you can persuade them to take it. But it is not sufficient to give proper attention to the quality of the food, the quantity likewise should be carefully regarded; that is, the child should never be allowed to feed too heartily at a time. There is nothing more hurtful in a cough of any kind, than filling the stomach too much at once, but especially in the Hooping cough*.”

A diet of this kind, but modified in an endless variety of ways, to meet the particular circumstances of the case, should be persisted in till after the crisis; and one thing should be particularly attended to, as vomiting is very necessary in almost all cases, such articles should be used in diet, as may give the patient the least uneasiness in the rejection. With this view, food in a fluid state is better than solids, and the patient should be encouraged to drink freely of some mild liquid. I have found new whey, new butter milk diluted with water, and when the patient was weak and exhausted, wine whey, very useful. Thin well boiled oat meal porridge, with a little new butter milk, and sweetened with more or less sugar to the taste of the patient, is

* Account of the Diseases most incident to Children, p. 116.

one of the best articles of diet I know. I have seen patients take this cheerfully twice a day, and refuse almost every thing else.

After the crisis a more nourishing diet may be allowed; but if this be permitted too early, a return of the fever with an aggravation of all the other symptoms is sure to be the consequence. The patients may first be indulged with more or less soup, and afterwards they may be cautiously permitted to take some of the lighter kinds of animal food in substance. Their appearing light and cheerful after meals, their sleeping soundly, and remaining cool and free from thirst through the night and next day, are proofs that the indulgence has not been granted too early, nor carried to too great an extent.

Dr Underwood is very partial to the use of milk in this disease. "The objection," says he, "made by old nurses against milk, that it breeds phlegm, is entirely founded in a gross mistake, and cannot be too frequently counteracted. Should the milk, however, be found to curdle remarkably soon on the stomach, a little common salt, Castile soap, or testaceous powder may be added to it occasionally; or asses milk may be substituted for cows."

After the disease has taken a decidedly phthisical form, nothing does so well as a purely milk and vegetable diet. When it has reduced the patient to a great degree of weakness, but without any serious organic affection, a light nourishing diet, a moderate supply of wine, and perhaps some tonic medicine, such as the preparations of bark, or of steel, with exercise in the open air, are the chief means to be trusted.

TREATMENT OF BRONCHITIS.

Following up the plan I have pursued in the two former divisions of this work, I should now give a view of the treatment recommended in Bronchitis; but having already far exceeded the limits I had prescribed myself for this essay, I shall merely refer the reader to Dr Badham's valuable work on that subject; and conclude by subjoining the following cases, treated by my friend Mr James Watson, one of the Surgeons to the Glasgow Royal Infirmary. As this paper of Mr Watson's contains some very interesting matter, I feel much pleasure in having obtained his permission to give it to the public.

GLASGOW, 26th June, 1813.

DEAR SIR,

Below you have the cases of Bronchitis, as I supposed them to be, which I promised. I remain, &c.

J. WATSON.

Dr ROBERT WATT.

John Buchanan, a stout fat boy, five years of age, was suddenly seized about the latter end of January last, with severe catarrhal symptoms. As he had been occasionally subject for the two last months, to slight affections of this kind, which had been easily removed, his mother gave him a dose of calomel, and a warm bath, expecting that next day he would be well. The calomel, however, only operated once, and he was much worse. I was sent for, and I suppose saw him about thirty hours after the complaint began. I found the boy was remarkably feverish. His face much flushed. His skin parched and very hot; his tongue white and dry, and pulse 140 rather sharp. His breathing was remarkably hurried. He coughed almost incessantly, but expectorated nothing; the cough seemed to pain him, and when questioned, he complained of his head and belly. He apparent-

ly lay with equal ease on either side or back, but he was very restless, changing his position every time he coughed. His eye was not muddy, and he seemed to have no objection to the light, but there was much keenness in his aspect, and he spoke quick when he did answer a question, which, however, he rather seemed averse to, being constantly inclined to sleep during the intervals of coughing. The abdomen felt rather swelled; he had been rather costive before the physic, and his urine since the commencement, had been scanty and high coloured.

He was immediately bled to the extent of six ounces, and the bleeding repeated on the two succeeding days, nearly to the same extent each time. A blister was applied to the breast; and as some doubts were entertained respecting the head, it was shaved, and another blister applied to the scalp. The bowels were remarkably obstinate, insomuch, that in spite of frequent large doses of the strongest purgatives, assisted by glysters, at least twice daily, it was four days before any considerable evacuation could be procured. Small slimy green stools during the first days came away with the glysters, but on the fourth day, after repeated doses of salts and senna,

large quantity of hard scybalæ were passed, after which the bowels kept pretty free. The dyspnœa and cough were much relieved after the second bleeding, but it was not till after this free evacuation that the pulse fell, the sleep became refreshing, and other evident symptoms of returning health shewed themselves. It may be remarked, that he recovered with little previous expectoration.

Shortly after John began to recover, his sister Agnes of three years of age, became gradually affected with cough, hurried respiration, and high fever, such as her brother; only there was less reason to suspect the head as being concerned. An emetic was given at the very commencement, followed by physic, which though rather a smart dose, produced but little effect. Leeches were applied to the breast, and then a small blister, with little relief. She was then bled twice, to the extent of about four ounces each time, with considerable relief, and after having been freely evacuated by smart doses of purgative medicines, she also gradually recovered, and at present neither she nor her brother have the smallest dyspnœa or cough.

The complaint about the same time with this

girl, also attacked James a child of a month old. The cough, however, in this case was loose. The child was passing green stools. A puke was given the first night of the complaint, followed by a dose of calomel, which operated well before morning. The difficulty of breathing, however, and cough still continuing, a leech was applied to the child's breast, which bled freely. About four in the afternoon, the breathing became more oppressed and irregular, the face was rather purple, the eye turned up, the pulse excessively quick and feeble, and the feet cold. In this state the child lay for a few hours, and then expired.—On dissection, the head and abdomen were found healthy. The trachea shewed evident marks of inflammation, and the bronchial tubes were nearly filled even to their great divisions, with a viscid mucus. There was also a serous effusion into the parenchymatous substance of the lungs.

APPENDIX.

AN INQUIRY

INTO THE RELATIVE MORTALITY OF THE PRINCIPAL

DISEASES OF CHILDREN,

AND THE

NUMBERS WHO HAVE DIED UNDER TEN YEARS OF AGE,

IN

Glasgow,

DURING THE LAST THIRTY YEARS.

— *infans*

Cui tantum in vita restat transire malorum.

LUGRET.

~~~~~  
1813.

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*THE number of inhabitants and progress of population in the kingdom, the increase or decrease of certain diseases, the comparative healthiness of different situations, climates and seasons, and the influence of particular trades and manufactures on the duration of life, are subjects of the highest importance to the community, and equally interesting to the Statesman, the Philosopher, and the Physician.*

PERCIVAL'S ESSAYS, VOL. III. P. 34.

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# APPENDIX.

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AN

## INQUIRY, &c.

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**I**N consulting the different authors who have written on Chincough, I found it repeatedly mentioned that the disease was more fatal some years than others; that it was more mild or more severe according to the season of the year, that it was most dangerous at a particular age; and lastly, that the female sex suffered more from it than the male. These observations accorded with a sort of estimate which I had previously formed, but still I could find no certain data to rest upon. This state of uncertainty led me to investigate the registers of deaths in Glasgow for the last thirty years. The result of which,

in so far as it respects Chincough, I have already given.

When I commenced that investigation, I was struck with the immense numbers carried off yearly by the Small Pox. This led me to calculate the great saving of human life that must have arisen from the vaccine inoculation. At this time above fifteen thousand had been inoculated publicly at the Faculty Hall, and perhaps twice or thrice that number in private practice. I remarked too, that the deaths by Small Pox were chiefly in infancy, hence, the deaths under two or three years of age bore a very great proportion to the whole deaths in the city. Taking an average of several years, I found that more than a half of the human species died before they were ten years of age, and that of this half more than a third died of the Small Pox, so that nearly a fifth part of all that were born alive perished by this dreadful malady.

I began to reflect how different the case must be now! In eight years little more than six hundred had died of the Small Pox; whereas in 1784 the deaths by that disease alone amounted to four hundred and twenty five, and in 1791 to six hundred and seven, which, on both occasions,

exceeded the fourth of the whole deaths in the year.

To ascertain the real amount of this saving of infantile life, I turned up one of the later years, and by accident that of 1808, when to my utter astonishment, I found that still a half or more than a half perished before the tenth year of their age! I could hardly believe the testimony of my senses, and therefore began to turn up other years, when I found that in all of them the proportion was less than in 1808; but still on taking an average of several years, it amounted to nearly the same thing as at any former period during the last thirty years. This was a discovery I by no means expected, and how it could have come to pass, appeared to me inexplicable.

From every circumstance which had come under my observation, the efficacy of vaccine inoculation appeared certain. The experience of thirteen years pretty extensive practice had confirmed me fully in this opinion. But still the question recurred, how are we to account for the same or nearly the same number of deaths under ten years of age? As no new disease has appeared, the deficiency occasioned by



the want of the Small Pox, must have been made up by a greater mortality among the other diseases of children. Has it been equally divided among them, or has a greater share fallen to some than to others?—To solve this question is the chief object of the following Inquiry.

The first step to be taken was to draw out Tables of the numbers who had died of each disease, and of the number of deaths under certain ages, so as to concentrate the information within as narrow limits as possible, and to shew at one view the relations they bore to one another, and their proportions to the whole deaths in the city. This I foresaw would be an arduous undertaking, but as it appeared to be the only way of solving the difficulty, I resolved to try it.

On inquiring into the state of the registers in the City, I found that something of that kind existed from a very remote period; but that it was only since the commencement of 1783 that they had been kept in a regular manner. At that time the principal burying grounds were those attached to the High Church, the College Church, and the North West Church. The interments in these three places in 1783 amounted

to 1262, while the whole deaths in the City and suburbs were 1519.

About this time the population began to increase very rapidly. A great number of Chapels and Meeting-houses were built in the suburbs, and to several of these burying grounds were attached, so that in 1798 there were more than a half of the funerals without the City.

In the City burying grounds we have almost the whole of the higher classes of the community, a large proportion of the middle ranks, and a very considerable number of the poor. The extra burying grounds are more occupied by the middle and lower orders of the community. I have noticed that in the suburbs, particularly in Calton, the proportion of deaths among children is much greater than in the City. One of the principal causes of this, I am told, is, that children can be buried there at less expense.

For the High Church burying ground there is one set of Registers; for the College and North West, another. The first of these commences with the year 1783, and the last a little earlier. For the ground attached to the Anderston Relief Meeting-house, there is a set of books which comprehend the same period. For the Calton

burying ground there is a fourth set, beginning with the year 1787, the time when the place was first inclosed for that purpose. The Gorbals Register was begun only in the year 1807. In this the proportion of deaths among children, did not appear to be greater than in the City.

These Registers are all kept nearly on the same plan. In one column they contain the date of each funeral, in another the names and designations of the persons, in a third the ages set down in years, months, weeks, and days; and lastly, the disease. With regard to all these particulars, the books bear the marks of being kept with great attention. The disease is the only thing, on which we cannot always rely with implicit confidence. All the keepers of the Registers complained of the difficulty they experienced in accomplishing this part of their business.

I have formed the first set of Tables, by combining all the different Registers. It comprehends the whole of the last thirty years; so that at one glance, it can be seen how many have died of each disease in every year, and in every month, during that period. And as all the diseases run in parallel columns, it can be readily seen in what proportion each of them has prevailed in



particular years, and at particular seasons of the same year.

The first four columns contain Small Pox, Measles, Chincough, and Stopping. These are so distinct from one another, and so different from every other disease, that I think their numbers must be very correct. The fifth column, containing deaths by Water in the Head, is more uncertain. The symptoms are more obscure and ambiguous, besides it is only of late years, that the disease has attracted general notice.

The two next columns contain the deaths by Teething and Bowelhives. The promiscuous mass thrown together under these heads, may be considered nearly in the same light as the great number of deaths in the London Bills of Mortality, ranked under the terms Convulsions, Gripes of the Guts, &c. I have no doubt that a considerable number of those said to have died of Teething and Bowelhives, particularly the former, have died of Water in the Head; hence it will be observed, that since the latter disease became better known, the number of deaths under that head have increased, while those under the former have diminished.

By the Bowelhives the people generally mean

some disease connected with an eruption. If this eruption come out, the patient is relieved; if it disappear the patient grows worse. In the last case it is supposed to have retired to the bowels, and hence the origin of the name. If the patient dies in a state of convulsions, this we are told is owing to the hives having gone in about the heart, or their having seized the bowels. But the principal circumstance by which this disease is known, occurs after death. It consists in a discoloration of the skin on the more depending parts of the body, a circumstance which every medical man knows to be common to all diseases, and particularly to those which prove suddenly fatal. In some cases where I have been convinced the patients died of Water in the Head, I have been triumphantly shewn after death the livid colour of the skin, as a decisive proof that my opinion had been wrong.

I have added Abortive and Still-born, as they are always included in the deaths under ten years of age, and as they might be more or fewer in any given year, this alone would have altered the proportions.

Fevers I have added, because the number of deaths among children could not well be ac-

counted for some years, without knowing that Fevers prevailed very much, and that probably a considerable number were carried off in this way. There is no distinction attended to in the Registers, with regard to the nature of the Fever. Scarlatina, Typhus, &c. are all comprehended under the same head.

The three last columns contain all the deaths under ten years of age. On comparing this part of the Tables with the statements given at the end of the year, I found some little difference, owing to the tens being sometimes taken in, and sometimes omitted, and also owing to the twos and fives being sometimes taken into one column, and sometimes into another. In the following Tables the twos are invariably omitted in the first column, the fives in the second, and the tens in the third.

I have also found some few differences as to the numbers who have died of each disease; but I have allowed none of these to escape, without satisfying myself that the numbers I have given were correct. In some of the vaccine reports it will be remarked, that the numbers who have died of Small Pox, are not so great as those which I have given; but it must be remembered



that these reports apply only to the City burying grounds; whereas in the Tables, the whole of the suburbs are also taken in, with the exception of a few inconsiderable places, where I believe no regular registers are kept.

In collecting from such a multiplicity of sources, in digesting the contents of fifteen folio volumes into so much minuteness of detail, some errors may have escaped me, both in copying and in calculation; but I am hopeful that there are none so considerable, as to affect materially the general conclusions I have drawn.

At first I had no idea of publishing the entire Tables. I intended merely to have given the result of my investigations; but after I had them fairly made out, I thought that to most readers it would be satisfactory to have the facts before them, as well as the deductions. The Tables are numerous, and to some they may appear trifling; but to others I am certain they will not only convey curious, but useful information. I know of no attempt having been made, with equal minuteness, and on so extensive a scale.

TABLE I. FOR 1783.

| Months. | Small Pox. | Measles. | Chincough. | Stopping. | W. in Head. | Teething. | Bowelhives. | Still-born. | Fevers. | Under Two. | Under Five. | Under Ten. |
|---------|------------|----------|------------|-----------|-------------|-----------|-------------|-------------|---------|------------|-------------|------------|
| Jan.    | 40         | 0        | 14         | 0         | 0           | 5         | 7           | 4           | 9       | 57         | 18          | 3          |
| Feb.    | 41         | 1        | 10         | 1         | 1           | 8         | 8           | 4           | 7       | 51         | 23          | 6          |
| Mar.    | 27         | 1        | 25         | 2         | 0           | 8         | 9           | 4           | 5       | 65         | 16          | 10         |
| Apr.    | 13         | 7        | 25         | 1         | 0           | 6         | 5           | 0           | 7       | 37         | 25          | 10         |
| May     | 12         | 11       | 31         | 3         | 0           | 3         | 9           | 5           | 3       | 46         | 20          | 8          |
| June    | 7          | 17       | 15         | 2         | 0           | 0         | 14          | 1           | 9       | 53         | 19          | 6          |
| July    | 6          | 14       | 11         | 0         | 2           | 3         | 8           | 2           | 14      | 41         | 14          | 4          |
| Aug.    | 5          | 11       | 7          | 1         | 1           | 1         | 11          | 4           | 13      | 33         | 7           | 6          |
| Sep.    | 2          | 3        | 5          | 1         | 0           | 5         | 11          | 3           | 7       | 22         | 13          | 5          |
| Oct.    | 0          | 1        | 4          | 1         | 1           | 2         | 12          | 7           | 10      | 30         | 6           | 2          |
| Nov.    | 2          | 0        | 4          | 1         | 0           | 0         | 3           | 5           | 17      | 18         | 4           | 3          |
| Dec.    | 0          | 0        | 2          | 1         | 1           | 3         | 10          | 3           | 17      | 26         | 9           | 3          |
| Tot.    | 155        | 66       | 153        | 14        | 6           | 44        | 107         | 42          | 118     | 479        | 174         | 66         |

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Total Deaths in the Registers, 1413.

TABLE II. FOR 1784.

Months.	Small Pox.	Measles.	Chincough.	Stopping.	W. in Head.	Feething.	Bowelhives.	Still-born.	Fevers.	Under Two.	Under Five.	Under Ten.
Jan.	0	0	0	4	0	15	11	6	17	35	12	5
Feb.	5	0	3	5	2	17	10	7	10	51	6	3
Mar.	7	0	1	6	0	8	8	4	13	32	10	6
Apr.	8	0	1	1	1	3	2	7	7	24	6	5
May	8	0	1	3	1	7	10	5	9	33	6	3
June	24	0	3	2	1	5	5	8	6	41	13	3
July	45	0	2	3	2	4	5	6	9	58	14	3
Aug.	75	0	1	2	1	2	6	8	10	75	15	6
Sep.	68	0	1	4	1	3	7	10	7	107	32	2
Oct.	99	1	0	3	1	3	8	5	20	109	22	4
Nov.	55	0	0	3	2	2	4	3	19	52	16	4
Dec.	31	0	0	5	3	6	13	7	19	54	9	1
Tot.	425	1	13	41	15	75	89	76	146	671	161	45

Total Deaths in the Registers, 1623.

TABLE III. FOR 1785.

Months.	Small Pox.	Measles.	Chincough.	Stopping.	W. in Head.	Teething.	Bowelhives.	Still-born.	Fever.	Under Two.	Under Five.	Under Ten.
Jan.	26	0	0	2	0	4	11	5	18	42	10	2
Feb.	16	0	0	2	2	5	7	9	19	42	10	2
Mar.	10	0	0	5	1	10	17	7	27	51	9	5
Apr.	12	0	2	4	1	4	4	10	44	36	9	1
May	5	0	2	6	1	7	9	6	30	37	8	3
June	5	0	1	1	1	9	17	4	16	42	3	3
July	13	0	1	5	3	10	16	9	21	50	9	6
Aug.	23	0	1	6	0	9	12	6	20	52	11	2
Sep.	21	0	2	5	0	5	6	8	20	49	12	5
Oct.	19	0	4	6	0	5	9	6	21	42	10	6
Nov.	22	0	8	3	0	7	7	5	34	57	14	3
Dec.	46	0	13	5	0	4	11	7	22	76	21	4
Tot.	218	0	34	50	9	79	126	82	292	576	126	42

Total deaths in the Registers, 1552.

TABLE IV. FOR 1786.

Months.	Small Pox.	Measles.	Chincough.	Stopping.	W. in Head.	Teething.	Bowelhives.	Still born.	Fevers.	Under Two.	Under Five.	Under Ten.
Jan.	37	1	12	7	1	6	16	10	25	71	18	4
Feb.	22	0	16	3	0	1	10	10	18	53	20	6
Mar.	26	1	30	3	3	5	10	2	25	68	17	11
Apr.	8	0	18	0	0	3	7	7	12	54	6	5
May	11	0	25	2	1	5	10	8	16	47	18	5
June	18	0	10	4	1	5	12	6	6	48	7	4
July	26	0	3	3	2	6	8	8	9	47	7	4
Aug.	31	0	10	3	2	2	9	5	10	52	11	3
Sep.	30	0	9	0	1	10	6	8	11	56	10	2
Oct.	33	0	10	2	1	6	8	5	9	52	18	3
Nov.	45	0	15	3	0	5	11	11	17	71	18	2
Dec.	61	0	15	3	1	9	10	7	19	87	29	7
Tot.	348	2	173	33	13	63	117	87	177	706	179	56

Total deaths in the Registers, 1622.

TABLE V. FOR 1787.

Monthe.	Small Pox.	Measles.	Chincough.	Stopping.	W. in Head.	Teething.	Bowelhives.	Still-born.	Fevers.	Under Two.	Under Five.	Under Ten.
Jan.	55	0	6	4	1	6	4	11	20	71	27	6
Feb.	38	1	7	6	0	5	17	5	10	72	19	2
Mar.	54	1	8	4	1	5	6	5	15	69	22	5
Apr.	24	2	7	6	1	7	15	4	20	55	20	11
May	20	1	6	2	1	6	10	4	26	42	11	3
June	15	5	4	1	1	4	10	13	14	53	10	2
July	17	3	3	6	2	7	14	12	22	57	12	4
Aug.	29	4	4	1	1	10	6	11	15	51	12	5
Sep.	25	1	5	1	0	3	11	14	18	53	16	12
Oct.	37	2	2	6	2	6	10	9	23	66	18	3
Nov.	43	2	2	4	2	11	8	9	24	76	16	3
Dec.	53	1	3	2	2	9	10	10	33	81	22	9
Tot.	410	23	57	43	14	79	121	107	240	746	205	65

Total Deaths in the Registers, 1802.

TABLE VI. FOR 1788.

Months.	Small Pox.	Measles.	Chincough.	Stopping.	W. in Head.	Teething.	Bowelhives.	Still-born.	Fevers.	Under Two.	Under Five.	Under Ten.
Jan.	41	0	3	5	0	1	7	8	32	55	19	6
Feb.	39	0		5	2	8	7	10	33	69	20	6
Mar.	43	0	1	2	0	9	18	10	38	83	21	6
Apr.	41	0	1	3	1	6	13	8	35	78	14	10
May	24	0	2	7	3	2	9	12	23	45	20	8
June	31	1	0	9	1	1	6	8	20	54	21	4
July	43	0	1	3	1	9	2	4	14	66	14	5
Aug.	49	0	1	2	2	2	10	6	16	78	14	6
Sep.	32	0	1	7	1	2	15	5	27	61	19	6
Oct.	18	0	2	10	0	6	5	13	21	53	12	4
Nov.	18	0	2	9	5	9	7	10	20	58	23	6
Dec.	20	0	2	11	1	5	13	15	23	70	24	2
Tot.	399	1	17	73	17	60	112	109	302	770	221	68

Total Deaths in the Registers, 1788.

TABLE VII. FOR 1789.

Months.	Small Pox.	Measles.	Chincough.	Stopping.	W. in Head.	Teething.	Bowelhives.	Still-born.	Fevers.	Under Two.	Under Five.	Under Ten.
Jan.	14	1	0	9	2	10	14	12	28	65	11	5
Feb.	13	1	0	8	0	9	19	13	13	57	17	6
Mar.	27	0	7	4	2	12	9	5	15	66	16	2
Apr.	30	1	3	2	1	2	4	11	3	46	9	4
May	39	0	4	1	9	5	9	8	11	58	24	8
June	24	0	5	7	0	4	8	9	14	60	22	9
July	28	0	4	3	3	4	11	15	3	55	19	5
Aug.	36	0	2	10	4	2	12	10	9	75	9	0
Sep.	37	1	7	6	1	5	14	9	6	77	13	10
Oct.	33	5	6	11	1	8	17	5	5	79	14	8
Nov.	42	4	2	7	0	2	11	7	9	69	14	11
Dec.	43	10	5	8	7	5	9	11	19	87	20	8
Tot.	366	23	45	76	30	68	137	115	135	794	188	76

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Total Deaths in the Registers, 1753.

TABLE VIII. FOR 1790.

| Months. | Small Pox. | Measles. | Chincough. | Stopping. | W. in Head. | Teething. | Bowelhives. | Still-born. | Fevers. | Under Two. | Under Five. | Under Ten. |
|---------|------------|----------|------------|-----------|-------------|-----------|-------------|-------------|---------|------------|-------------|------------|
| Jan.    | 44         | 8        | 9          | 6         | 2           | 7         | 14          | 7           | 16      | 76         | 29          | 9          |
| Feb.    | 40         | 3        | 13         | 10        | 1           | 5         | 14          | 6           | 10      | 81         | 23          | 7          |
| Mar.    | 33         | 1        | 13         | 6         | 4           | 4         | 9           | 12          | 22      | 84         | 18          | 11         |
| Apr.    | 33         | 1        | 17         | 5         | 4           | 7         | 13          | 12          | 5       | 81         | 18          | 7          |
| May     | 36         | 0        | 17         | 3         | 4           | 4         | 2           | 5           | 20      | 80         | 19          | 4          |
| June    | 34         | 1        | 12         | 4         | 4           | 7         | 7           | 10          | 17      | 70         | 28          | 8          |
| July    | 37         | 0        | 11         | 8         | 4           | 5         | 14          | 7           | 11      | 73         | 19          | 6          |
| Aug.    | 33         | 4        | 14         | 4         | 2           | 7         | 7           | 14          | 10      | 73         | 19          | 12         |
| Sep.    | 20         | 2        | 13         | 6         | 2           | 5         | 6           | 5           | 7       | 73         | 15          | 8          |
| Oct.    | 11         | 0        | 20         | 10        | 5           | 1         | 8           | 10          | 6       | 78         | 17          | 1          |
| Nov.    | 5          | 7        | 19         | 6         | 0           | 5         | 13          | 7           | 11      | 48         | 24          | 5          |
| Dec.    | 10         | 6        | 19         | 10        | 6           | 9         | 14          | 8           | 20      | 86         | 18          | 8          |
| Tot.    | 336        | 33       | 177        | 78        | 38          | 66        | 131         | 103         | 155     | 903        | 247         | 86         |

Total Deaths in the Registers, 1866.



TABLE IX. FOR 1791.

| Months. | Small Pox. | Measles. | Chincough. | Stopping. | W. in Head. | Teething. | Bowelhives. | Still-born. | Fevers. | Under Two. | Under Five. | Under Ten. |
|---------|------------|----------|------------|-----------|-------------|-----------|-------------|-------------|---------|------------|-------------|------------|
| Jan.    | 14         | 1        | 13         | 13        | 2           | 2         | 16          | 5           | 11      | 74         | 20          | 3          |
| Feb.    | 10         | 0        | 10         | 6         | 1           | 9         | 17          | 8           | 11      | 52         | 19          | 6          |
| Mar.    | 6          | 0        | 20         | 14        | 1           | 8         | 7           | 14          | 8       | 60         | 17          | 8          |
| Apr.    | 15         | 0        | 13         | 9         | 5           | 11        | 9           | 16          | 16      | 65         | 26          | 5          |
| May     | 18         | 0        | 9          | 7         | 5           | 9         | 11          | 8           | 15      | 63         | 22          | 4          |
| June    | 41         | 0        | 5          | 8         | 5           | 10        | 7           | 8           | 9       | 61         | 28          | 8          |
| July    | 33         | 0        | 4          | 4         | 1           | 3         | 12          | 5           | 11      | 57         | 16          | 2          |
| Aug.    | 71         | 0        | 13         | 4         | 3           | 7         | 13          | 12          | 11      | 101        | 32          | 5          |
| Sep.    | 78         | 0        | 6          | 3         | 2           | 7         | 12          | 10          | 9       | 102        | 24          | 5          |
| Oct.    | 114        | 0        | 4          | 8         | 0           | 4         | 7           | 9           | 12      | 118        | 36          | 6          |
| Nov.    | 94         | 0        | 12         | 5         | 4           | 6         | 9           | 8           | 10      | 105        | 38          | 5          |
| Dec.    | 113        | 3        | 8          | 8         | 6           | 2         | 9           | 9           | 9       | 126        | 42          | 6          |
| Tot.    | 607        | 4        | 117        | 89        | 35          | 78        | 129         | 112         | 132     | 984        | 320         | 63         |

Total Deaths in the Registers, 2146.

TABLE X. FOR 1792.

| Months. | Small Pox. | Measles. | Chincough. | Stopping. | W. in Head. | Teething. | Bowelhives. | Still-born. | Fevers. | Under Two. | Under Five. | Under Ten. |
|---------|------------|----------|------------|-----------|-------------|-----------|-------------|-------------|---------|------------|-------------|------------|
| Jan.    | 52         | 1        | 7          | 9         | 3           | 2         | 9           | 8           | 15      | 76         | 30          | 9          |
| Feb.    | 28         | 0        | 4          | 3         | 1           | 5         | 3           | 11          | 12      | 48         | 15          | 3          |
| Mar.    | 13         | 1        | 5          | 4         | 5           | 12        | 10          | 9           | 13      | 53         | 11          | 2          |
| Apr.    | 7          | 3        | 4          | 0         | 5           | 11        | 13          | 9           | 19      | 52         | 9           | 4          |
| May     | 3          | 8        | 3          | 7         | 1           | 10        | 5           | 5           | 9       | 38         | 10          | 3          |
| June    | 4          | 11       | 3          | 6         | 0           | 7         | 10          | 11          | 15      | 48         | 16          | 5          |
| July    | 4          | 17       | 4          | 1         | 0           | 9         | 10          | 6           | 11      | 48         | 24          | 8          |
| Aug.    | 10         | 3        | 5          | 4         | 0           | 7         | 13          | 12          | 14      | 51         | 15          | 1          |
| Sep.    | 11         | 3        | 9          | 4         | 1           | 8         | 9           | 10          | 15      | 56         | 15          | 3          |
| Oct.    | 14         | 3        | 5          | 3         | 2           | 8         | 7           | 7           | 16      | 50         | 5           | 5          |
| Nov.    | 25         | 4        | 8          | 2         | 0           | 13        | 15          | 8           | 32      | 75         | 19          | 7          |
| Dec.    | 31         | 4        | 11         | 6         | 0           | 7         | 16          | 11          | 34      | 69         | 15          | 4          |
| Tot.    | 202        | 58       | 68         | 49        | 18          | 99        | 120         | 107         | 205     | 664        | 184         | 54         |

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Total Deaths in the Registers, 1848.

TABLE XI. FOR 1793.

Months.	Small Pox.	Measles.	Chincough.	Stopping.	W. in Head.	Teething.	Bowelhives.	Still-born.	Fevers.	Under Two.	Under Five.	Under Ten.
Jan.	14	2	13	5	0	6	6	13	35	51	24	11
Feb.	17	3	15	4	4	15	9	9	26	68	28	7
Mar.	18	0	24	6	5	11	16	11	18	86	29	4
Apr.	18	0	12	0	8	22	8	8	26	78	18	9
May	19	0	13	4	5	12	10	8	20	55	15	11
June	16	0	10	2	6	7	12	8	10	53	16	4
July	26	0	4	5	1	7	6	8	7	58	11	6
Aug.	31	0	3	3	5	4	4	5	10	57	13	9
Sep.	56	0	6	3	1	5	4	1	5	76	15	2
Oct.	54	0	4	2	3	3	5	4	12	61	12	8
Nov.	64	0	5	2	3	3	9	10	5	75	29	3
Dec.	56	0	3	6	2	8	11	9	9	89	29	6
Tot.	389	5	112	42	43	103	100	94	183	807	239	80

Total Deaths in the Registers, 2045.

TABLE XII. FOR 1794.

Months.	Small Pox.	Measles.	Chincough.	Stopping.	W. in Head.	Teething.	Bowelhives.	Still-born.	Fevers.	Under Two.	Under Five.	Under Ten.
Jan.	69	0	4	4	1	6	7	8	5	92	22	6
Feb.	41	0	0	1	3	4	4	8	8	52	14	9
Mar.	37	0	1	2	2	7	11	11	9	64	12	2
Apr.	19	0	5	6	2	0	13	9	13	60	14	8
May	10	0	6	2	3	1	10	11	6	38	8	7
June	7	0	3	5	1	2	12	4	19	36	11	5
July	6	0	1	2	5	2	11	2	13	29	12	3
Aug.	9	1	4	3	1	3	3	5	8	33	7	5
Sep.	3	0	3	2	1	5	7	5	9	31	10	3
Oct.	9	2	6	1	4	6	5	7	16	31	9	4
Nov.	11	3	9	4	3	1	9	7	10	44	12	5
Dec.	14	1	9	4	3	7	5	6	10	43	13	5
Tot.	235	7	51	36	29	44	97	83	126	553	144	62

Total Deaths in the Registers, 1445.

TABLE XIII. FOR 1795.

Months.	Small Pox.	Measles.	Chincough.	Stopping.	W. in Head.	Teething.	Bowelhives.	Still-born.	Fevers.	Under Two.	Under Five.	Under Ten.
Jan.	16	14	12	6	3	8	8	8	14	63	19	2
Feb.	14	4	23	3	0	2	5	6	10	56	15	8
Mar.	16	10	22	3	2	8	18	8	9	75	21	7
Apr.	22	4	19	4	0	4	12	4	10	64	17	4
May	25	3	26	2	6	5	14	7	8	77	19	7
June	38	4	25	1	2	1	9	1	8	71	19	9
July	40	0	12	0	1	2	19	6	4	60	17	7
Aug.	49	1	12	2	4	2	10	4	2	59	19	2
Sep.	59	2	4	2	1	0	4	8	4	72	22	2
Oct.	35	2	8	3	2	3	6	8	6	62	13	3
Nov.	47	1	8	1	4	2	5	3	4	48	20	6
Dec.	41	1	9	1	2	3	5	9	13	54	24	5
Tot.	402	46	180	28	27	40	115	72	92	761	225	62

Total Deaths in the Registers, 1901.

TABLE XIV. FOR 1796.

Months.	Small Pox.	Measles.	Chincough.	Stopping.	W. in Head.	Teething.	Bowelhives.	Still-born.	Fevers.	Under Two.	Under Five.	Under Ten.
Jan.	37	0	3	8	3	1	6	10	6	55	16	3
Feb.	26	0	2	3	9	4	7	2	8	43	14	5
Mar.	26	0	5	3	4	3	7	7	7	56	13	4
Apr.	8	2	7	6	5	3	4	6	7	35	12	3
May	17	15	6	5	4	2	12	8	9	50	19	8
June	8	23	6	5	2	6	7	7	20	45	24	6
July	9	22	3	1	3	2	11	8	5	47	13	3
Aug.	12	14	3	0	1	8	6	10	8	42	12	3
Sep.	9	7	1	5	6	3	12	10	14	47	16	3
Oct.	7	2	5	10	2	8	5	5	13	50	6	3
Nov.	7	1	7	2	2	6	8	8	17	44	13	2
Dec.	11	6	12	9	5	0	8	9	23	48	23	11
Tot.	177	92	60	57	46	46	93	90	137	562	181	54

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Total Deaths in the Registers, 1369.



TABLE XV. FOR 1797.

| Months. | Small Pox. | Measles. | Chincough. | Stopping. | W. in Head. | Teething. | Bowelhives. | Still-born. | Fevers. | Under Two. | Under Five. | Under Ten. |
|---------|------------|----------|------------|-----------|-------------|-----------|-------------|-------------|---------|------------|-------------|------------|
| Jan.    | 14         | 0        | 10         | 8         | 3           | 3         | 7           | 4           | 15      | 41         | 26          | 7          |
| Feb.    | 20         | 0        | 8          | 8         | 6           | 7         | 8           | 7           | 21      | 46         | 28          | 6          |
| Mar.    | 33         | 0        | 11         | 15        | 4           | 4         | 9           | 10          | 20      | 68         | 27          | 7          |
| Apr.    | 44         | 1        | 8          | 6         | 2           | 3         | 3           | 11          | 26      | 55         | 30          | 6          |
| May     | 47         | 1        | 6          | 5         | 2           | 3         | 6           | 5           | 15      | 55         | 24          | 5          |
| June    | 51         | 0        | 7          | 5         | 3           | 3         | 4           | 5           | 10      | 59         | 29          | 5          |
| July    | 43         | 0        | 6          | 4         | 3           | 3         | 8           | 6           | 13      | 55         | 18          | 5          |
| Aug.    | 28         | 0        | 2          | 2         | 3           | 1         | 7           | 3           | 11      | 43         | 14          | 5          |
| Sep.    | 17         | 0        | 0          | 2         | 0           | 4         | 5           | 3           | 11      | 36         | 5           | 1          |
| Oct.    | 13         | 0        | 6          | 7         | 0           | 3         | 6           | 8           | 10      | 26         | 8           | 3          |
| Nov.    | 9          | 1        | 5          | 4         | 1           | 3         | 5           | 8           | 8       | 46         | 13          | 3          |
| Dec.    | 25         | 2        | 7          | 1         | 4           | 3         | 9           | 7           | 23      | 46         | 24          | 4          |
| Tot.    | 354        | 5        | 76         | 67        | 31          | 38        | 84          | 77          | 183     | 586        | 241         | 57         |

Total Deaths in the Registers, 1662.

TABLE XVI. FOR 1798.

| Months. | Small Pox. | Measles. | Chincough. | Stopping. | W. in Head. | Teething. | Bowelhives. | Still-born. | Fevers. | Under Two. | Under Five. | Under Ten. |
|---------|------------|----------|------------|-----------|-------------|-----------|-------------|-------------|---------|------------|-------------|------------|
| Jan.    | 21         | 0        | 12         | 3         | 4           | 2         | 11          | 7           | 9       | 52         | 22          | 8          |
| Feb.    | 8          | 0        | 3          | 4         | 2           | 7         | 9           | 8           | 8       | 38         | 13          | 1          |
| Mar.    | 15         | 0        | 6          | 3         | 7           | 6         | 5           | 7           | 7       | 40         | 14          | 4          |
| Apr.    | 17         | 0        | 5          | 1         | 1           | 5         | 11          | 10          | 8       | 47         | 11          | 2          |
| May     | 18         | 0        | 6          | 1         | 3           | 2         | 6           | 11          | 13      | 40         | 12          | 3          |
| June    | 13         | 0        | 5          | 2         | 1           | 2         | 8           | 7           | 17      | 35         | 5           | 5          |
| July    | 32         | 1        | 8          | 2         | 2           | 4         | 15          | 7           | 7       | 61         | 16          | 4          |
| Aug.    | 13         | 1        | 3          | 1         | 2           | 2         | 10          | 13          | 4       | 46         | 9           | 5          |
| Sep.    | 26         | 0        | 4          | 0         | 2           | 1         | 11          | 10          | 6       | 55         | 8           | 1          |
| Oct.    | 36         | 0        | 13         | 0         | 2           | 8         | 8           | 8           | 6       | 58         | 20          | 2          |
| Nov.    | 45         | 1        | 17         | 1         | 1           | 2         | 15          | 13          | 8       | 75         | 21          | 2          |
| Dec.    | 65         | 0        | 16         | 4         | 1           | 9         | 9           | 8           | 14      | 95         | 30          | 4          |
| Tot.    | 309        | 3        | 98         | 22        | 28          | 50        | 118         | 109         | 107     | 642        | 181         | 41         |

Total Deaths in the Registers, 1603.

TABLE XVII. FOR 1799.

| Months. | Small Pox. | Measles. | Chincough. | Stopping. | W. in Head. | Teething. | Bowelhives. | Still-born. | Fevers. | Under Two. | Under Five. | Under Ten. |
|---------|------------|----------|------------|-----------|-------------|-----------|-------------|-------------|---------|------------|-------------|------------|
| Jan.    | 69         | 1        | 23         | 9         | 5           | 6         | 8           | 21          | 18      | 100        | 44          | 6          |
| Feb.    | 43         | 0        | 13         | 6         | 4           | 3         | 15          | 10          | 16      | 63         | 31          | 7          |
| Mar.    | 47         | 0        | 11         | 1         | 2           | 3         | 13          | 13          | 9       | 76         | 15          | 11         |
| Apr.    | 38         | 0        | 6          | 3         | 1           | 1         | 13          | 18          | 12      | 70         | 16          | 9          |
| May     | 23         | 0        | 10         | 3         | 6           | 3         | 10          | 9           | 10      | 57         | 14          | 6          |
| June    | 21         | 0        | 2          | 7         | 8           | 0         | 21          | 13          | 12      | 56         | 16          | 3          |
| July    | 21         | 1        | 4          | 6         | 5           | 3         | 9           | 14          | 14      | 48         | 18          | 3          |
| Aug.    | 20         | 5        | 2          | 2         | 4           | 6         | 7           | 13          | 16      | 47         | 14          | 8          |
| Sep.    | 23         | 5        | 3          | 3         | 5           | 3         | 17          | 12          | 15      | 55         | 15          | 6          |
| Oct.    | 21         | 10       | 12         | 4         | 7           | 10        | 16          | 13          | 14      | 69         | 29          | 6          |
| Nov.    | 18         | 12       | 6          | 2         | 2           | 7         | 12          | 15          | 23      | 66         | 20          | 7          |
| Dec.    | 26         | 9        | 3          | 2         | 3           | 2         | 15          | 15          | 21      | 76         | 12          | 6          |
| Tot.    | 370        | 43       | 95         | 48        | 52          | 47        | 156         | 166         | 180     | 783        | 244         | 78         |

Total Deaths in the Registers, 1906.



TABLE XVIII. FOR 1800.

| Months. | Small Pox. | Measles. | Chincough. | Stopping. | W. in Head. | Teething. | Bowelhives. | Still-born. | Fevers. | Under Two. | Under Five. | Under Ten. |
|---------|------------|----------|------------|-----------|-------------|-----------|-------------|-------------|---------|------------|-------------|------------|
| Jan.    | 27         | 4        | 3          | 4         | 1           | 1         | 9           | 11          | 18      | 52         | 24          | 6          |
| Feb.    | 14         | 3        | 6          | 2         | 3           | 4         | 7           | 6           | 15      | 32         | 18          | 4          |
| Mar.    | 16         | 3        | 5          | 1         | 3           | 2         | 9           | 7           | 13      | 39         | 14          | 6          |
| Apr.    | 20         | 1        | 1          | 3         | 5           | 1         | 5           | 10          | 4       | 35         | 17          | 5          |
| May     | 11         | 0        | 1          | 1         | 0           | 2         | 6           | 12          | 12      | 39         | 5           | 3          |
| June    | 11         | 2        | 1          | 1         | 2           | 0         | 4           | 9           | 8       | 31         | 5           | 2          |
| July    | 18         | 1        | 2          | 3         | 3           | 2         | 7           | 7           | 9       | 46         | 3           | 7          |
| Aug.    | 22         | 1        | 1          | 3         | 4           | 2         | 10          | 9           | 6       | 56         | 7           | 3          |
| Sep.    | 27         | 5        | 0          | 5         | 3           | 1         | 7           | 9           | 9       | 61         | 12          | 4          |
| Oct.    | 22         | 0        | 2          | 0         | 3           | 2         | 4           | 11          | 10      | 50         | 13          | 4          |
| Nov.    | 36         | 0        | 2          | 1         | 2           | 1         | 4           | 12          | 11      | 51         | 9           | 3          |
| Dec.    | 33         | 1        | 3          | 1         | 3           | 2         | 9           | 16          | 10      | 53         | 21          | 6          |
| Tot.    | 257        | 21       | 27         | 25        | 32          | 20        | 81          | 119         | 125     | 545        | 148         | 53         |

Total Deaths in the Registers, 1550.

TABLE XIX. FOR 1801.

| Months. | small Pox. | Measles. | Chincough. | Stopping. | W. in Head. | Tecthing. | Bowelhives. | Still-born. | Fevers. | Under Two. | Under Five. | Under Ten. |
|---------|------------|----------|------------|-----------|-------------|-----------|-------------|-------------|---------|------------|-------------|------------|
| Jan.    | 43         | 0        | 11         | 3         | 2           | 2         | 9           | 8           | 9       | 55         | 22          | 10         |
| Feb.    | 15         | 0        | 8          | 4         | 5           | 0         | 7           | 9           | 7       | 39         | 15          | 7          |
| Mar.    | 13         | 1        | 16         | 5         | 1           | 3         | 3           | 5           | 12      | 40         | 16          | 3          |
| Apr.    | 17         | 1        | 10         | 4         | 1           | 4         | 2           | 8           | 9       | 36         | 17          | 4          |
| May     | 13         | 0        | 10         | 3         | 2           | 2         | 4           | 5           | 1       | 37         | 15          | 5          |
| June    | 10         | 1        | 12         | 1         | 3           | 0         | 8           | 2           | 4       | 25         | 14          | 4          |
| July    | 8          | 2        | 6          | 7         | 1           | 3         | 10          | 5           | 6       | 30         | 14          | 1          |
| Aug.    | 10         | 0        | 6          | 6         | 1           | 1         | 2           | 9           | 5       | 35         | 9           | 2          |
| Sep.    | 19         | 0        | 9          | 4         | 4           | 2         | 8           | 5           | 4       | 35         | 15          | 5          |
| Oct.    | 21         | 0        | 19         | 2         | 1           | 3         | 9           | 8           | 9       | 56         | 17          | 9          |
| Nov.    | 33         | 1        | 5          | 10        | 2           | 2         | 4           | 5           | 12      | 43         | 22          | 5          |
| Dec.    | 43         | 2        | 13         | 8         | 4           | 2         | 6           | 14          | 11      | 63         | 35          | 6          |
| Tot.    | 245        | 8        | 125        | 57        | 27          | 24        | 72          | 83          | 89      | 494        | 211         | 61         |

Total Deaths in the Registers, 1434.

TABLE XX. FOR 1802.

| Months. | Small Pox. | Measles. | Chincough. | Stopping. | W. in Head. | Teething. | Bowelhives. | Still-born. | Fevers. | Under Two. | Under Five. | Under Ten. |
|---------|------------|----------|------------|-----------|-------------|-----------|-------------|-------------|---------|------------|-------------|------------|
| Jan.    | 38         | 2        | 9          | 7         | 1           | 7         | 6           | 13          | 20      | 48         | 35          | 13         |
| Feb.    | 19         | 1        | 11         | 1         | 1           | 2         | 7           | 12          | 16      | 34         | 23          | 6          |
| Mar.    | 13         | 1        | 15         | 8         | 2           | 2         | 4           | 11          | 12      | 39         | 27          | 2          |
| Apr.    | 7          | 2        | 18         | 4         | 2           | 1         | 15          | 7           | 5       | 40         | 20          | 5          |
| May     | 7          | 1        | 7          | 1         | 5           | 1         | 7           | 14          | 16      | 32         | 17          | 7          |
| June    | 1          | 0        | 6          | 0         | 2           | 2         | 8           | 11          | 20      | 29         | 15          | 3          |
| July    | 13         | 2        | 3          | 3         | 4           | 5         | 4           | 8           | 18      | 28         | 16          | 9          |
| Aug.    | 7          | 8        | 1          | 3         | 3           | 4         | 13          | 10          | 23      | 37         | 19          | 8          |
| Sep.    | 13         | 32       | 3          | 12        | 1           | 3         | 18          | 10          | 12      | 56         | 29          | 16         |
| Oct.    | 7          | 46       | 5          | 8         | 1           | 0         | 25          | 17          | 32      | 70         | 49          | 10         |
| Nov.    | 9          | 43       | 8          | 8         | 2           | 2         | 17          | 3           | 35      | 67         | 37          | 17         |
| Dec.    | 22         | 30       | 4          | 12        | 1           | 5         | 14          | 7           | 38      | 64         | 39          | 19         |
| Tot.    | 156        | 168      | 90         | 67        | 25          | 34        | 138         | 123         | 247     | 544        | 326         | 115        |

Total Deaths in the Registers, 1770.



TABLE XXI. FOR 1803.

| Months. | Small Pox. | Measles. | Chincough. | Stopping. | W. in Head. | Teething. | Bowelhives. | Still-born. | Fevers. | Under Two. | Under Five. | Under Ten. |
|---------|------------|----------|------------|-----------|-------------|-----------|-------------|-------------|---------|------------|-------------|------------|
| Jan.    | 7          | 13       | 1          | 6         | 9           | 3         | 16          | 12          | 41      | 59         | 32          | 15         |
| Feb.    | 10         | 14       | 5          | 11        | 0           | 6         | 7           | 5           | 22      | 47         | 34          | 8          |
| Mar.    | 9          | 9        | 7          | 8         | 1           | 3         | 6           | 8           | 22      | 50         | 24          | 14         |
| Apr.    | 9          | 0        | 6          | 6         | 1           | 3         | 17          | 12          | 16      | 52         | 13          | 9          |
| May     | 10         | 5        | 8          | 7         | 1           | 4         | 7           | 13          | 21      | 43         | 16          | 5          |
| June    | 9          | 0        | 5          | 4         | 3           | 4         | 10          | 11          | 18      | 39         | 15          | 8          |
| July    | 18         | 1        | 4          | 4         | 2           | 4         | 14          | 5           | 14      | 34         | 19          | 7          |
| Aug.    | 8          | 1        | 1          | 5         | 1           | 4         | 17          | 6           | 20      | 59         | 11          | 3          |
| Sep.    | 18         | 1        | 4          | 4         | 2           | 2         | 14          | 15          | 19      | 48         | 18          | 4          |
| Oct.    | 24         | 0        | 3          | 4         | 0           | 1         | 10          | 8           | 20      | 54         | 18          | 3          |
| Nov.    | 27         | 1        | 1          | 4         | 1           | 1         | 20          | 16          | 13      | 55         | 17          | 7          |
| Dec.    | 45         | 0        | 15         | 6         | 1           | 3         | 18          | 12          | 16      | 70         | 26          | 4          |
| Tot.    | 194        | 45       | 60         | 69        | 22          | 38        | 156         | 123         | 242     | 610        | 243         | 87         |

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Total Deaths in the Registers, 1860.

TABLE XXII. FOR 1804.

Months.	Small Pox.	Measles.	Chincough.	Stopping.	W. in Head.	Teething.	Bowelhives.	Still-born.	Fevers.	Under Two.	Under Five.	Under Ten.
Jan.	32	1	6	3	2	3	10	15	18	67	19	7
Feb.	27	0	7	7	5	2	8	16	14	63	20	11
Mar.	31	0	4	9	7	1	13	13	15	59	24	7
Apr.	38	1	4	10	3	3	7	13	12	58	23	8
May	22	2	3	9	4	1	5	7	12	42	18	6
June	9	0	2	3	4	5	9	10	14	26	12	10
July	13	1	4	5	5	2	13	10	10	36	13	10
Aug.	7	8	1	8	6	0	10	13	11	49	15	7
Sep.	10	2	6	9	4	6	7	7	9	49	11	2
Oct.	10	0	6	9	3	2	11	10	14	40	16	8
Nov.	11	7	2	4	2	3	9	7	9	43	13	7
Dec.	3	5	7	12	1	4	13	14	8	51	8	5
Tot.	213	27	52	88	46	32	115	135	146	583	192	88

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Total Deaths in the Registers, 1670.

TABLE XXIII. FOR 1805.

| Months. | Small Pox. | Measles. | Chincough. | Stopping. | W. in Head. | Teething. | Bowelhives. | Still-born. | Fevers. | Under Two. | Under Five. | Under Ten. |
|---------|------------|----------|------------|-----------|-------------|-----------|-------------|-------------|---------|------------|-------------|------------|
| Jan.    | 5          | 15       | 14         | 14        | 5           | 6         | 8           | 11          | 9       | 66         | 17          | 11         |
| Feb.    | 1          | 18       | 10         | 15        | 3           | 5         | 14          | 6           | 13      | 56         | 23          | 8          |
| Mar.    | 1          | 10       | 11         | 15        | 7           | 3         | 8           | 8           | 11      | 42         | 19          | 8          |
| Apr.    | 2          | 14       | 4          | 9         | 4           | 5         | 11          | 11          | 7       | 52         | 18          | 10         |
| May     | 0          | 4        | 6          | 7         | 7           | 3         | 6           | 6           | 7       | 34         | 17          | 5          |
| June    | 0          | 1        | 6          | 7         | 5           | 0         | 6           | 4           | 10      | 24         | 15          | 13         |
| July    | 3          | 1        | 4          | 8         | 1           | 2         | 5           | 4           | 1       | 36         | 7           | 5          |
| Aug.    | 5          | 1        | 6          | 7         | 3           | 3         | 17          | 8           | 7       | 45         | 10          | 3          |
| Sep.    | 4          | 3        | 7          | 7         | 2           | 0         | 20          | 5           | 10      | 50         | 5           | 5          |
| Oct.    | 11         | 8        | 6          | 6         | 2           | 5         | 10          | 14          | 12      | 57         | 9           | 5          |
| Nov.    | 17         | 8        | 24         | 6         | 0           | 4         | 14          | 14          | 14      | 83         | 19          | 2          |
| Dec.    | 7          | 7        | 31         | 11        | 4           | 1         | 6           | 13          | 15      | 71         | 29          | 5          |
| Tot.    | 56         | 90       | 129        | 112       | 43          | 37        | 125         | 104         | 116     | 616        | 188         | 80         |

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Total Deaths in the Registers, 1671.

TABLE XXIV. FOR 1806.

Months.	Small Pox.	Measles.	Chincough.	Stopping.	W. in Head.	Teething.	Bowelhives.	Still-born.	Fevers.	Under Two.	Under Five.	Under Ten.
Jan.	3	8	34	8	3	1	18	12	27	73	23	4
Feb.	6	8	21	7	8	0	11	13	17	58	20	13
Mar.	1	4	20	10	5	1	12	9	9	48	24	11
Apr.	2	11	23	7	6	3	9	9	10	52	25	9
May	1	4	19	10	6	2	8	9	15	45	19	8
June	2	7	10	4	2	0	7	6	8	27	9	5
July	1	5	5	6	3	1	14	7	13	38	6	7
Aug.	0	2	6	6	1	2	11	4	9	26	10	3
Sep.	5	0	3	8	3	5	5	9	5	34	15	3
Oct.	1	3	5	8	6	4	9	13	20	45	11	8
Nov.	4	3	8	13	0	4	6	9	9	33	16	6
Dec.	2	1	8	5	4	2	14	14	9	38	10	4
Tot.	28	56	162	92	47	25	124	114	151	517	188	81

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Total Deaths in the Registers, 1629.

TABLE XXV. FOR 1807.

| Months. | Small Pox. | Measles. | Chincough. | Stopping. | W. in Head. | Teething. | Bowelhives. | Still-born. | Fevers. | Under Two. | Under Five. | Under Ten. |
|---------|------------|----------|------------|-----------|-------------|-----------|-------------|-------------|---------|------------|-------------|------------|
| Jan.    | 3          | 3        | 7          | 12        | 3           | 5         | 12          | 11          | 10      | 51         | 23          | 10         |
| Feb.    | 1          | 1        | 3          | 10        | 5           | 4         | 15          | 4           | 21      | 44         | 13          | 8          |
| Mar.    | 11         | 3        | 7          | 12        | 4           | 9         | 11          | 14          | 25      | 56         | 28          | 12         |
| Apr.    | 8          | 1        | 8          | 8         | 5           | 3         | 5           | 11          | 14      | 48         | 17          | 13         |
| May     | 2          | 0        | 2          | 10        | 6           | 2         | 8           | 7           | 10      | 28         | 9           | 7          |
| June    | 2          | 1        | 4          | 8         | 7           | 5         | 9           | 7           | 8       | 37         | 14          | 6          |
| July    | 9          | 0        | 2          | 4         | 3           | 5         | 14          | 6           | 17      | 34         | 13          | 9          |
| Aug.    | 6          | 0        | 5          | 4         | 6           | 1         | 12          | 10          | 4       | 50         | 14          | 1          |
| Sep.    | 13         | 3        | 6          | 10        | 3           | 3         | 11          | 16          | 12      | 58         | 13          | 9          |
| Oct.    | 20         | 1        | 5          | 12        | 4           | 2         | 16          | 19          | 15      | 59         | 24          | 6          |
| Nov.    | 10         | 2        | 18         | 7         | 5           | 6         | 17          | 9           | 12      | 66         | 20          | 8          |
| Dec.    | 12         | 1        | 18         | 18        | 3           | 11        | 16          | 4           | 15      | 64         | 23          | 4          |
| Tot.    | 97         | 16       | 85         | 115       | 54          | 56        | 146         | 118         | 163     | 595        | 211         | 93         |

Total Deaths in the Registers, 1806.

TABLE XXVI. FOR 1808.

| Months. | Small Pox. | Measles. | Chincough. | Stopping. | W. in Head. | Teething. | Bowelhives. | Stik-born. | Fevers. | Under Two. | Under Five. | Under Ten. |
|---------|------------|----------|------------|-----------|-------------|-----------|-------------|------------|---------|------------|-------------|------------|
| Jan.    | 11         | 2        | 10         | 28        | 2           | 8         | 22          | 12         | 22      | 79         | 27          | 9          |
| Feb.    | 4          | 2        | 20         | 10        | 6           | 6         | 17          | 20         | 24      | 71         | 34          | 15         |
| Mar.    | 6          | 5        | 12         | 15        | 5           | 6         | 17          | 19         | 28      | 71         | 27          | 22         |
| Apr.    | 4          | 71       | 18         | 11        | 9           | 6         | 17          | 13         | 17      | 109        | 49          | 33         |
| May     | 5          | 259      | 9          | 2         | 2           | 6         | 17          | 8          | 18      | 164        | 137         | 35         |
| June    | 6          | 260      | 9          | 6         | 4           | 4         | 12          | 19         | 11      | 202        | 96          | 19         |
| July    | 6          | 118      | 2          | 5         | 5           | 3         | 13          | 13         | 9       | 106        | 53          | 8          |
| Aug.    | 4          | 32       | 2          | 9         | 3           | 1         | 25          | 12         | 12      | 76         | 26          | 7          |
| Sep.    | 0          | 22       | 2          | 13        | 5           | 8         | 16          | 14         | 7       | 62         | 26          | 10         |
| Oct.    | 3          | 10       | 2          | 13        | 1           | 1         | 6           | 15         | 8       | 48         | 11          | 6          |
| Nov.    | 1          | 4        | 4          | 11        | 1           | 7         | 21          | 11         | 7       | 51         | 25          | 4          |
| Dec.    | 1          | 2        | 2          | 9         | 3           | 8         | 12          | 12         | 17      | 40         | 10          | 7          |
| Tot.    | 51         | 787      | 92         | 132       | 46          | 64        | 195         | 168        | 180     | 1079       | 521         | 175        |

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Total Deaths in the Registers, 2623.

TABLE XXVII. FOR 1809.

Months.	Small Pox.	Measles.	Chincough.	Stopping.	W in Head.	Teething.	Bowelhives.	Still-born.	Fevers.	Under Two.	Under Five.	Under Ten.
Jan.	1	4	7	6	2	2	14	8	16	37	9	9
Feb.	5	4	6	7	5	2	18	8	11	44	17	8
Mar.	1	2	7	5	10	3	18	9	14	46	11	19
Apr.	6	1	10	16	5	5	14	17	19	75	23	16
May	5	4	22	8	9	4	15	12	14	64	22	10
June	9	4	25	6	1	2	8	17	12	61	14	3
July	18	6	22	9	1	1	10	8	11	57	23	6
Aug.	19	2	15	13	3	1	12	10	10	52	24	7
Sep.	17	4	35	7	2	0	16	11	11	67	24	12
Oct.	40	1	23	18	7	5	10	14	7	87	45	7
Nov.	27	2	36	8	1	5	18	19	10	101	41	9
Dec.	11	10	45	23	5	5	12	15	12	91	34	12
Tot.	159	44	259	126	51	35	165	148	147	782	287	118

Total Deaths in the Registers, 2124.

TABLE XXVIII. FOR 1810.

Months.	Small Pox.	Measles.	Chincough.	Stopping.	W. in Head.	Teething.	Bowelhives.	Still-born.	Fevers.	Under Two.	Under Five.	Under Ten.
Jan.	11	4	33	11	7	4	7	14	9	60	32	14
Feb.	4	4	32	7	7	3	15	9	13	66	19	8
Mar.	2	3	19	10	5	2	15	17	7	65	15	8
Apr.	3	3	9	15	4	0	22	16	3	71	9	5
May	2	3	8	8	8	2	19	12	11	61	20	12
June	1	0	8	5	4	5	12	17	6	46	10	6
July	0	1	6	9	10	7	14	27	8	65	14	8
Aug.	1	0	4	7	4	7	28	17	4	69	7	4
Sep.	0	1	5	11	5	7	16	25	5	70	6	5
Oct.	0	0	5	14	4	11	21	20	7	67	11	7
Nov.	4	0	8	12	0	7	17	20	6	61	12	6
Dec.	0	0	10	14	2	4	23	9	18	64	14	10
Tot.	28	19	147	123	60	59	209	203	97	765	169	93

Total Deaths in the Registers, 2111.

TABLE XXIX. FOR 1811.

Months.	Small Pox.	Measles.	Chincough.	Stopping.	W. in Head.	Teething.	Bowelhives.	Still-born.	Fevers.	Under Two.	Under Five.	Under Ten.
Jan.	3	2	10	12	6	7	23	21	11	75	26	9
Feb.	2	1	7	10	5	5	17	6	13	49	19	15
Mar.	5	1	4	9	8	2	22	13	15	51	10	16
Apr.	5	1	5	9	10	7	21	17	10	62	16	12
May	4	1	5	5	7	2	23	12	7	51	16	6
June	5	2	3	5	7	3	21	16	12	56	14	9
July	19	1	5	2	5	1	21	12	20	52	18	17
Aug.	18	2	3	6	2	5	17	13	6	51	10	3
Sep.	20	7	8	9	4	3	12	11	10	58	19	10
Oct.	14	12	2	13	5	1	15	6	16	50	28	15
Nov.	7	76	5	9	3	4	28	13	24	99	67	12
Dec.	7	161	5	4	1	1	23	15	31	115	98	40
Tot.	109	267	62	93	63	41	243	155	175	769	341	164

Total Deaths in the Registers, 2342.

TABLE XXX. FOR 1812.

Months.	Small Pox.	Measles.	Chincough.	Stopping.	W. in Head.	Teething.	Bowelhives.	Still-born.	Fevers.	Under Two.	Under Five.	Under Ten.
Jan.	5	130	7	10	4	3	45	1	18	146	92	16
Feb.	5	61	8	4	1	10	13	9	15	86	32	11
Mar.	7	30	5	6	1	4	21	9	8	61	21	13
Apr.	5	19	10	11	9	2	21	5	13	61	33	8
May	3	15	6	6	4	5	21	14	3	62	26	6
June	2	18	5	5	4	1	27	13	4	48	25	10
July	4	5	7	8	6	3	13	9	5	41	13	8
Aug.	9	6	1	5	2	5	15	8	5	45	15	4
Sep.	13	6	7	16	6	4	23	8	5	67	26	4
Oct.	14	3	9	10	5	2	20	7	7	55	28	8
Nov.	7	1	10	11	5	4	26	3	14	55	22	9
Dec.	4	10	28	11	7	2	34	8	8	77	38	6
Tot.	78	304	103	103	54	45	279	104	105	804	371	103

Total Deaths in the Registers, 2348.

Having now the whole materials before me, my next step was to ascertain the exact proportion which the deaths by each disease bore to the whole deaths in the Registers, and to see what proportions had died under the ages of two, five and ten years. With this view, I divided the whole thirty years into five equal periods of six years each. The first three of these periods had passed before the vaccine inoculation could have had any influence; in the fourth it had nearly reached its maximum; and in the last it may be said to have been pretty fully established, perhaps as much so, as in any other City in the Empire.

On this plan I constructed the following Table, which brings the relative proportion of deaths by the different diseases, at different periods, within very narrow limits. The first column of figures contains the numbers who have died by Small Pox out of each hundred. Thus adding together the whole deaths by Small Pox in the first period, they amounted to 1955, by adding the total deaths in the same period, they amounted to 9994, hence, it was discovered that of each hundred, nineteen and fifty five hundredth parts died of the Small Pox. In other

words, the deaths by Small Pox amounted to nineteen and something more than a half per cent. of the whole deaths in the Registers. I proceeded in the same manner with Measles, Chincough, and all the other diseases, and also with regard to the different ages.

To ascertain the increase or decrease of the deaths by any of the diseases, or at any particular age, observe the column of figures immediately below. Thus, under Measles in the first period we find .93 a decimal fraction. At that time the average of deaths by Measles did not amount to one per cent. of the whole deaths in the Registers. In the second period they amounted to 1.17 or twenty four hundredth parts of a per cent. more than in the first. In the third period to 2.10, or nearly one per cent. more than in the second. In the fourth period to 3.92, and in the last period to 10.76.

TABLE XXXI.

SHewing THE GENERAL RESULT OF THE PRECEDING TABLES.

Periods.	Small Pox.	Measles.	Chincough.	Stopping.	W. in Head.	Teething.	Bowelhives.	Still-born.	Fevers.	Under Two.	Under Five.	Under Ten.	Total under Ten.	Total Deaths in the Registers.
I.	19.55	.93	4.51	2.54	.74	4.	6.72	5.03	12.65	39.40	10.66	3.42	53.48	9994
II.	18.22	1.17	5.13	3.33	1.73	4.12	6.43	5.53	8.43	42.38	11.90	3.79	58.07	11103
III.	18.70	2.10	5.36	2.47	2.14	2.41	6.47	6.33	8.24	38.82	12.21	3.45	54.48	9991
IV.	8.90	3.92	6.12	4.93	2.11	1.89	7.27	6.69	9.87	33.50	13.43	5.10	52.03	10034
V.	3.90	10.76	5.57	5.18	2.15	2.24	9.26	6.70	6.49	35.89	14.22	5.58	55.49	13354

The first thing which strikes the mind on surveying the preceding Table, is the vast diminution in the proportion of deaths by the Small Pox; a reduction from 19.55 to 3.90; but the increase in the subsequent column is still more remarkable, an increase from .95 to 10.76. In the Small Pox we have the deaths reduced to nearly a fifth of what they were twenty five years ago; in the same period, the deaths by Measles have increased more than eleven times. This is a fact so striking, that I am astonished it has not attracted the notice of older practitioners, who have had it in their power to compare the mortality by Measles in former periods, with what all of them must have experienced during the last five years.

The greatest number of deaths, which has happened by Small-Pox, in any one month during the last thirty years, was 114. This took place in October 1791. In the month of December immediately following, they amounted to 113, these are the only two instances in thirty years, where the deaths by Small Pox amounted to one hundred in a month. But these are slight visitations, when compared with the ravages which have been committed in an equally short time by

the Measles. In May 1808 the deaths by Measles alone, amounted to 259, in June to 260, and in July to 118. In December 1811, they amounted to 161, and in the January immediately following to 130. What an amazing difference, when we compare these numbers with 433, the sum of all the deaths by Measles in eighteen years preceding 1801. In the last five years, 1430 have died of Measles in Glasgow.

When the Measles were so prevalent and fatal in 1808, I have often been told that it was owing to the vaccine inoculation; but I considered this as an idle tale, the invention of those who were hostile to the Cow Pox. I could readily admit that more must die of Measles now than formerly, for if the whole children were saved from the Small Pox, a fifth or a sixth part, must necessarily be added to the deaths by the Measles. Perhaps something more than this might reasonably be expected. Some of the weak and unhealthy, who would have died of Small Pox, are left to fall a sacrifice to the Measles. Thus if five formerly died by the Measles, that number might now be increased to six, eight, or perhaps ten, but I could not go farther. This I have constantly

stated to my pupils, and to my patients as often as the subject happened to be mentioned.

But however novel and strange the opinion may appear, it must be admitted that while the Small Pox were in full force, they had the power of modifying and rendering the Measles mild; and now that they are in a great measure expelled, the Measles are gradually coming to occupy the same ground which they formerly occupied. I am sorry to make this statement, but the facts, at least with regard to Glasgow, are too strong to admit of doubt.

That the Measles should have been thus modified by the Small Pox, is rendered highly probable by various analogical facts. The manner in which the vaccine disease prevents the Small Pox is quite in point, and when it has failed in preventing them altogether, it has rendered them so mild, as not to be attended with the smallest danger. May not the Small Pox have a similar effect with regard to the Measles?

When the Small Pox were in full force, few children escaped them for any considerable length of time. Hence it will be found, that most of those who have had the Small Pox and Measles in the casual way, have had the Small

Pox first. This I believe will have been the case in more than nine tenths of the community. Still, however, as the Measles came round now and then, as a very general epidemic, they must occasionally have had the precedence, and it was perhaps chiefly among such patients, that the disease proved fatal. I am the more disposed to believe this, because in looking over the registers of these times, I find the deaths by Measles were generally among very young children. I may mention another fact in confirmation of this hypothesis. The only family within my knowledge, where three died of the Measles in 1808, was one where none of the children had been either vaccinated or had had the Small Pox. I met with another family where two died in the same circumstances.

An opinion has prevailed with some, that vaccination does positive harm, by infusing some peccant or vicious humour into the constitution. I do not see the smallest ground for this hypothesis; but that Small Pox do good to those who survive the disease, by rendering the system insusceptible of other infections, or by rendering these diseases, when they do take place, more mild, must, I think, be admitted. This opinion is

contrary to all medical belief, but the facts before us seem sufficiently strong to warrant the conclusion. In the first period, the deaths by Small Pox amounted to more than a third of all the deaths under ten years of age; yet there is no time, when a child had a better chance of reaching its tenth year, than in this very period. In the fourth period indeed, the deaths under ten are only 52.03 per cent.; but this diminution depended on a decrease of the deaths under two, which is about balanced by an increase in the last period, where the deaths under ten are above an average of the whole preceding twenty four years.

The great increase of deaths between two and ten years of age is very remarkable. In the first period they amounted to no more than 14.08 per cent.; in the last period they came little short of 20 per cent. Are we to expect a continuation of this increase of deaths from ten to fifteen, generally a very critical period of life; and in the ages from fifteen to twenty? As matters now stand, we have gained under two; we have lost between two and five, and also between five and ten. At ten we stand nearly on the original level, but if we are to lose between ten and twenty,

it shews us how truly abortive all our schemes have been. We may, it seems, by the permission of Divine Providence, deprive death of some of his apparently most efficient means, but deprived of these, new means are discovered, or the old improved.

I cannot help quoting the following passage from Dr Woolcombe, as somewhat prophetic of this general result. “ May not the discovery of the Cow Pox,” says he, “ if it should ultimately effect the extermination of the Small Pox, which it may do when the prejudices of mankind shall permit, be welcomed rather on account of its influence in diminishing human suffering, than on account of its effect in diminishing human mortality? Since disease is one of the appointed checks to excessive population, and the plan of Providence in the creation of human life, requires the termination of the existence of one third of its creatures, before they have attained the age of two years, it may be doubted whether the annihilation of so efficient an instrument as Small Pox, can be admitted without the substitution of some other equally destructive malady. The substituted malady may, indeed be productive of less collateral af-

fiction, than the loathsome distemper whose place it supplies. But granting that no direct substitute should arise, it will not follow that disease in general will be deprived of its accustomed share in checking population; and if it be not, the only difference will be in the proportion of victims submitted to other disorders. The infant rescued from Small Pox, may be rescued only to perish in childhood by Measles or Scarlatina, or be preserved to swell the list of youthful victims to the insatiate maw of Consumption.” This speculation,” continues Dr W. “on the influence of Cow Pox on population, is totally foreign from the question of the merits and advantages of vaccination, which in my estimation are placed beyond all cavil *.”

I have supposed that the constitution is improved by the Small Pox, certainly not by imparting a greater portion of health than was originally assigned to the individual; but perhaps by eradicating certain unobserved deviations from health, which if not early removed, by the accession of some acute disease, would have proved the seeds of early mortality, by gaining a deeper hold of the constitution before the

* Remarks on the frequency and fatality of different Diseases, p. 48, 1808.

Measles and other epidemics, which are generally later in their appearance, came round.

That the deaths under ten years of age have not been diminished by the removal of the Small Pox, may perhaps be explained in this way. We may suppose that the seeds of early mortality are coeval with life, they may be communicated from the mother during gestation, or they may be implanted by improper nursing and future mismanagement. In this manner, being always present, they only require the fostering aid of some acute disease, to render them superior to the energies of the constitution, and the powers of medicine. In this point of view we are not to consider the Small Pox as so peculiarly fatal in their nature. They perhaps prove so fatal merely by having the start of other diseases. The Measles, the Chincough, the Croup, the Scarlet Fever, and perhaps many others, would have proved equally fatal, had they occurred first.

The question will be naturally asked, what is this condition of body on which early death so materially depends? Can it be discovered by any set of symptoms? Can medicine have any share in its removal? To enter on the consideration

of these subjects, would be foreign to my present purpose; but I could not help pointing them out as objects well worthy of medical attention.

The present Inquiry must lead to another very important end, I mean the forming a just estimate of the danger of certain diseases. How miserably disappointed would that practitioner be, who forms his estimate of Measles now, by the sentiments of Dr Cullen and others, who practised thirty years ago? At that time the deaths did not amount to one per cent. of the whole deaths. In the London Bills of Mortality, about ten or eleven in a thousand; whereas in Glasgow, on an average of the last six years, they exceed ten and a half per cent; in the last five years they are above twelve per cent.

The practitioner is generally on the alert in proportion to the supposed danger of the disease he is treating. May we not then fairly conclude, that the dreadful mortality of Measles, is, in some measure, to be imputed to the practitioner's not being aware of the formidable nature of the disease he had to contend with. In 1802 I was very much disappointed in my endeavours to relieve my patients, though I applied, as I thought, with sufficient diligence the

remedies said to be effectual. This led me in future epidemics, particularly that of 1808 and that in the end of 1811 and beginning of 1812, to adopt more vigorous measures, and I certainly did think that my practice was much more successful.

I used emetics when called in early, with the most decided advantage. The most active purgatives were found beneficial throughout the whole course of the disease. When the head, thorax or abdomen seemed threatened with more than ordinary oppression or increased action, the lancet seldom failed to give complete relief. By the steady use of these branches of treatment, and the occasional application of a blister, I have rescued many patients from apparent death; and I am not without hopes, that by a general adoption of such measures, many more may be saved from this disease.

Wherever Measles proved fatal, it was in consequence of the most acute inflammation of the contents of the cranium, the thorax or the abdomen; or in consequence of that oppressed state of the system, which, if not relieved by the most active measures in the beginning, terminates in what is termed a putrid or nervous

diathesis, putting on all the appearances of the most malignant Typhus. Of this last condition I saw many deplorable instances, where I was late in being called in, or where the patients had previously been treated on what is termed the tonic plan.

In forming an estimate of the danger of any epidemic disease, it may perhaps be necessary to inquire whether or not it is the first with which the child has been affected. On this circumstance, if my new ideas be correct, much stress ought to be laid, particularly in so far as it regards the casual Small Pox and Measles. It is only on this principle that we can explain how it happened, that thirty years ago, not one in a hundred died of Measles, whereas now more than one in ten dies of them. At that time as few escaped the Measles entirely as now; but before they were affected with Measles they had generally passed through the Small Pox, by which the secondary disease was so modified, as to be almost completely divested of danger.

I have often wondered what effect variolus Inoculation may have had upon the Measles. It will be seen by the Tables, that the Measles

had begun to be more fatal long before the introduction of the Cow Pox. Could this be in consequence of Inoculation becoming more general? In the second and third periods, the deaths by Small Pox had diminished one per cent. while those by Measles had increased in a similar or greater proportion.

To enable the reader to form a sort of comparison between the deaths in Glasgow and those in other Cities, the following abstract of the London Bills of Mortality, in so far as regard Small Pox and Measles, may not be uninteresting. The century is divided into ten equal periods, as given in the first column. The second column contains the average proportion of deaths by Small Pox in each thousand of the whole deaths, in each period. The third column contains the proportion of deaths by Measles; and the last the total deaths in London during the whole century.

T A B L E.

Periods.	Small Pox.	Measles.	Total Deaths.
From 1700 till 1711	56.6	5.5	214,611
1710 — 1721	80.4	6.5	239,095
1720 — 1731	84.0	5.6	274,922
1730 — 1741	77.1	7.0	264,925
1740 — 1751	72.0	6.8	253,527
1750 — 1761	102.7	11.5	204,607
1760 — 1771	102.7	11.1	234,416
1770 — 1781	96.3	9.3	214,605
1780 — 1791	92.2	11.0	192,690
1790 — 1801	94.2	13.4	196,801

This Table shews two very remarkable circumstances, namely, that the number of deaths by Small Pox in the last half of the century was much greater than in the first; notwithstanding Inoculation and all the improved methods of treating that disease; and that the number of deaths by Measles in the last half, was nearly double that of the first. I am sorry I have not the means, just now, of bringing down this investigation from 1800 to the present time.

With regard to Chincough, the Small Pox and Measles do not seem to hold the same connection. During the whole thirty years, Chincough seems to have maintained a very steady course. It has increased, but not in any very considerable degree. When the Small Pox were at their greatest height in 1791, the Chincough had more than its ordinary proportion of the deaths. In 1808, when the Measles outstripped every former epidemic, still the Chincough produced its full share of the mortality. The same remark will apply in 1811 and also in 1812.

Between Small Pox, Measles and Stopping, there is perhaps a more intimate connection. It is certainly very remarkable, that notwithstanding the boasted improvements in the treatment of Croup, the deaths by that disease should be more than doubled. It is to be remarked, however, that all the cases registered under Stopping, may not have been genuine cases of Croup.

As to the increase of deaths by Water in the Head, I have already hinted that that circumstance may be accounted for by the disease being better known. Teething has diminished in a similar proportion.

I was in hopes, for the credit of medicine, that

the number under the term Bowelhives would have been diminished. That it has not diminished, may perhaps be accounted for from this circumstance, that the report is generally received from the people themselves, who have often their own notions as to the nature of the complaint; and which they never fail to consider as fully confirmed, if the body become livid after death.

I had hoped too, that the number of Still-born children would have been reduced, but here I have also been disappointed. The proportion on the contrary has increased from 5.03 to 6.70, or something more than a per cent. and a half on the whole deaths. With regard to this increase, the Small Pox and Vaccination could have had no share, and therefore we must look for other causes to account for it. One of the most probable, is the introduction of particular manufactures, by which immense numbers of women are employed in public works or confined to sedentary employments, by which the general health and vigour of the system must be materially impaired.

From this cause, we may calculate not only on a greater number of dead born children, but

also on a more puny offspring in general, and consequently on a greater number of deaths in infancy.

I may add, that among the working people, children are perhaps more neglected during infancy now than they were formerly. There is a greater temptation, and perhaps a greater necessity for women to follow employments, and when they are working, to confine their children to a cradle, or intrust them to young persons, who want both care and experience to do them justice. Another cause still remains to be noticed, that of confining the children themselves, at a very early age, to sedentary employments, or what is perhaps still worse, to unhealthy public works.

From these considerations, I am of opinion, that were the Small Pox to prevail, as generally now as they did thirty years ago, perhaps the proportion of deaths by that disease would be still greater than it was then. This fact, however, can only be ascertained by reports from different parts of the kingdom, where different customs and different employments prevail. I am in hopes that the present Inquiry,



will call forth similar investigations from other quarters.

The numbers who have died of Fevers, have suffered considerable revolutions, but have diminished upon the whole. In the early periods they are said to have been chiefly owing to Typhus, in later times Scarlatina has had a considerable share. I would suggest as an improvement in the Registers, that the deaths by the latter disease, should be carefully distinguished from others. I am persuaded, that of late Scarlatina has been a very considerable cause of mortality among children.

THE END.

